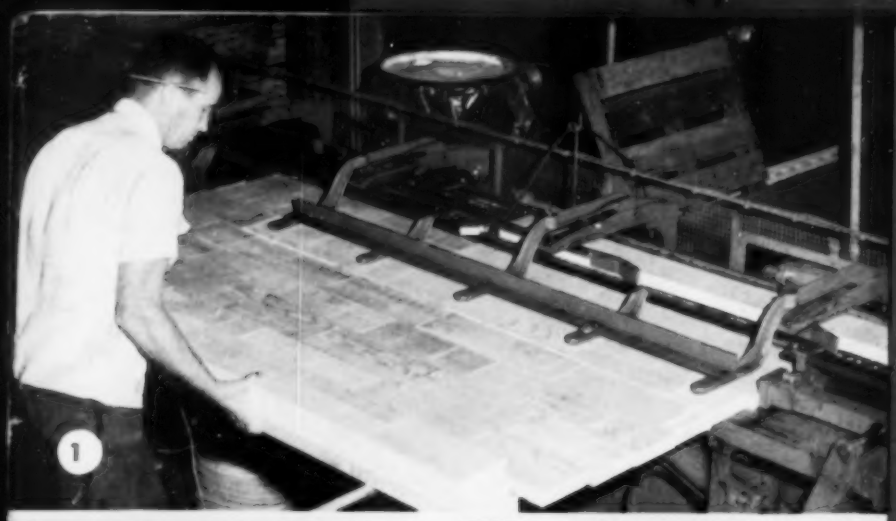

SEPTEMBER, 1957

WOOD and Wood Products

The National Authority on Wood and Allied Products Management and Operations

A Vance PUBLICATION

FEATURES IN THIS ISSUE

- Finger Jointing Adds Carload of Lumber per Week (1)
- The Case for Hollow, and Paper Honeycomb Cores (2)
- Hand Crafts, Modern Methods Create Antique Finish (3)
- Quality Control for Rotary Veneer Cutting (4)
- Production Ideas—Trends—Dry Kiln Corner—Products

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Dr. N. V. Poletika

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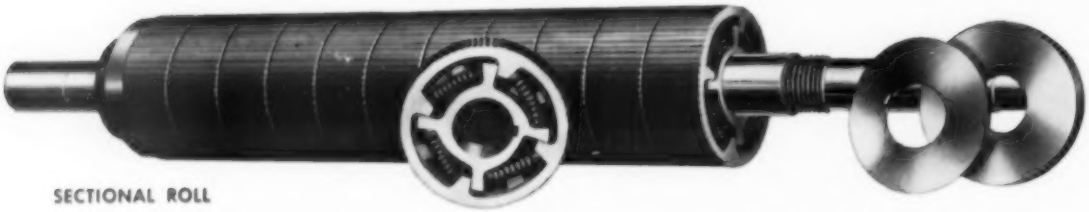

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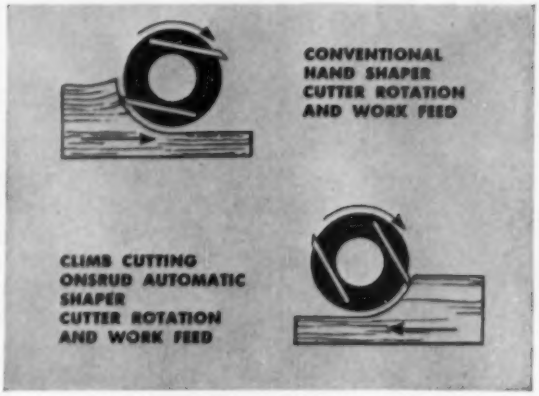
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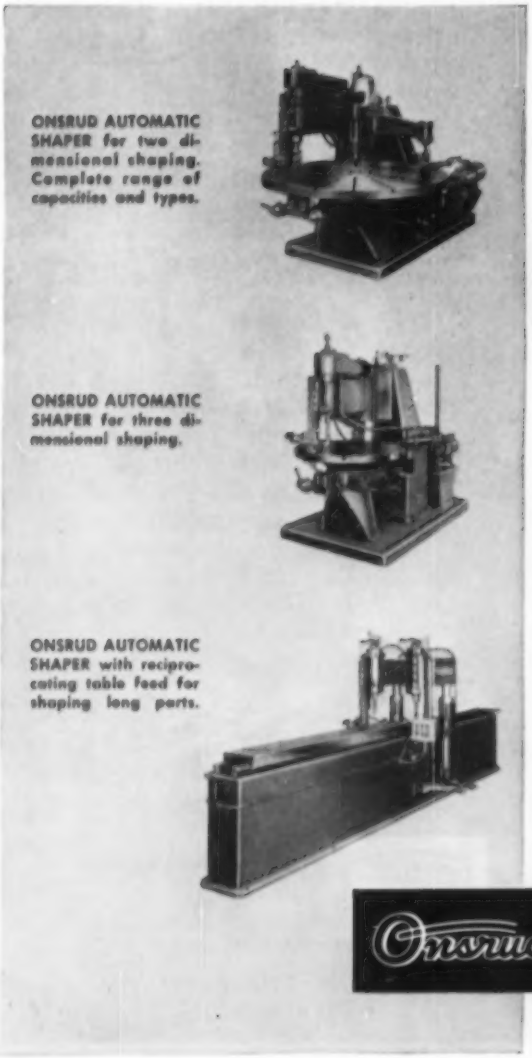
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. . . for every type and size of work!

Onsrud Automatic Shapers are now supplied (1) with rotary table feed for shaping in two dimensions, (2) with rotary table feed and automatic rise-and-fall feed for shaping in three dimensions and (3) with reciprocating table feed for shaping extra long parts. All Onsrud Automatic Shapers are sold on a GUARANTEED production basis. We guarantee performance as specified at the time of sale. May we give you complete information?

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WOOD and Wood Products

The National Authority on Wood and Allied Products Management and Operations

SEPTEMBER, 1957

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UTILIZATION

Finger Jointing Adds Carload of Usable Lumber per Week 20

MANAGEMENT

The Case for Hollow Cores 22
The Case for Paper Honeycomb Cores 23

PARTICLE BOARD

How to Test Particle Board's Machining Qualities 24

MATERIALS HANDLING

Two Ways to Lower Costs With Materials Handling 27

VENEER

A Quality Control Plan for Rotary Veneer Cutting 28

FINISHING

Old Hand Crafts, Modern Methods Create Popular Heirloom Finish 32

GLUING

High-Frequency Assembly Machine Boosts Frame Output 25% ..36

PRODUCTION

Power Tools Aid Custom Cabinet Output 38

DEPARTMENTS AND NEWS

News and Trends 7
Prices 10
Letters 12
Dry Kiln Corner 14
Coming Events 16
Editorial 19
Production Ideas 40
Products 45
Literature 54
What's New in Wood Products ..72
Wood Puzzlers 73
Names and Events 76
Classified 84
WOOD Salutes 86

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There's a LINCK GANGSAW for everybody!

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If you believe a Linck Gangsaw won't cut hardwoods profitably or if you believe a Linck Gangsaw is only for the king-size operator, then this is especially for you. Whatever the size of your operation, whatever size logs you normally cut, whether you cut hardwoods or softwoods, there is a Linck Gangsaw that will reduce your operating costs. Any way you figure it, the less you have to shell out for production, the more you'll be able to put in your pocket.

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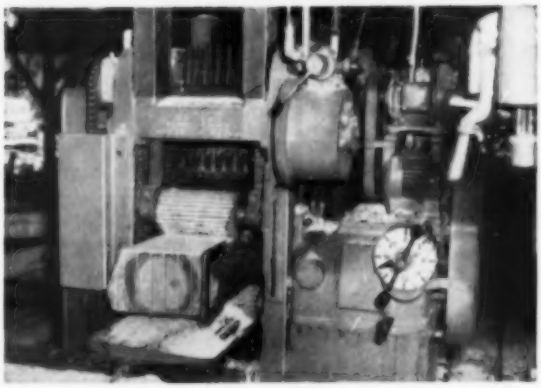
TANDEM GANGS MADE PRACTICAL WITH AUTOMATIC SAW SHIFTING

Eliminates Log-Sorting

Pictured below are two Linck Gangsaws arranged in tandem.

Logs enter the Linck in background. This machine is equipped with an exclusive Linck development, the Automatic Saw Width Adjuster. Push-button controls *instantly* shift banks of saws *between logs*, so that you get maximum footage and maximum grade without pre-canting and without log-sorting. The cants produced on the first Linck are then processed through the second Linck Gangsaw in the foreground.

High production, quality lumber, fewest possible workmen.



Pre-slabbed cant being turned into accurate lumber on a small Linck Gangsaw, Model K-45.

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WOOD and Wood Products

The National Authority on Wood and Allied Products Management and Operations

NEWS and TRENDS

MARKETS • DEVELOPMENTS • FUTURES

"KITCHEN FURNITURE" TREND LOOKS HOT

It looks now like the more-fine-wood-in-kitchens trend may blossom suddenly into a full-fledged kitchen-furniture trend and result in greater sales for cabinet makers, veneer manufacturers, paneling firms, and kitchen cabinet makers.

In a little-publicized short course for kitchen salesmen recently at Purdue University, W. M. Kline, Jr., manager custom kitchens department, Westinghouse Electric Corp., brought out these facts: (1) Movement has been under-way strongly for several years to remove the "hospital look" from kitchens and replace it with "home-like look." Evidence is in developments like more natural wood cabinets, and attached, paneled family rooms. (2) Cabinet-top ranges, built-in ovens and a new development which allows almost any drawer to become a refrigerator means tremendously flexible kitchen layouts are possible.

(3) Kitchens of the very near future will be composed of a series of free-standing modular units. Each unit will be on short legs with cabinets below, a counter top, and a back supporting cupboards above. Units will be finished in fine, warm woods. Each will be handsome as a fine breakfront. There will be seven or eight units, each tailored for a specific purpose. One, for example, will be for meat preparation and have self-contained cold storage drawers, and cooking units.

Westinghouse has final plans for the units in design and laboratory stage. G.E. is known to be working along same lines. A well-known Indiana manufacturer of kitchen cabinets may put free-standing units on the market early this fall. Units will mean less expensive on-site work during both new construction and remodeling.

FURNITURE SHIPMENTS ON HIGH PLATEAU FOR FIRST HALF

At the end of the first half of '57, furniture shipments were on a high plateau "only 5% below the all-time high record set in '56," N.A.F.M. reports. For the yearly sales totals, N.A.F.M. is sticking to its prediction that '57 will equal and perhaps slightly surpass the record set in '56.

June furniture orders were 3% greater than for June, '56. Unfilled orders for June were 1% under same month last year, but much better than May which was 10% under May, '56. Here's the box score on shipments of specific items for the first half of '57 as compared to same period of '56: casegoods, tables, kitchens—all 5% below; upholstered—4% below; infants—3% below; metal—12% below.

PARTICLE BOARD IS BIG BUSINESS

Recent survey article by a national business newspaper brought out some shrewd, some crude observations about burgeoning growth of the particle board industry. Some facts, in any event, help point up present size and big potential for the industry:

By the end of '57, some 53 plants will be in production, and at least 10 more are in the planning or construction stage. About $7.2 million in adhesive sales are now being made annually to producers. Newly formed Particle Board Association is setting up standards in an effort to obtain government approval so the product

can be used in the vast field of roof and wall sheathing.

Private and government laboratories are working on many projects to widen markets and guide buyers in its use. See article entitled "How to Test Particle Board's Machining Qualities," page 24 in this issue of WOOD & WOOD PRODUCTS which has helped foster the remarkable growth of particle board activity.

LUMBER PRODUCTION DOWN 9%

Production of lumber nationally for the first half of '57 was down 9% from the same period last year. First half production this year was 17,073 MM bd. ft., according to N.L.M.A. Shipments were down 10%; new orders were down 8%. Gross mill stocks were up 15% for June over June, '56.

For the first six months, redwood production was down 18%, and shipments were off 17% compared to the like period of '56. One producer, with 59 district offices, is offering laminated redwood beams for churches, schools.

PREDICTS MORE LAMINATED 2X4'S, 2X6'S

Richard Bailin, sales consultant, Thermatron Div., Radio Receptor Co., predicts biggest future use of wood bonding radio frequency generators will be in laminating 1x4's into 2x4's and 1x6's into 2x6's and otherwise laminating large beams and timbers.

RISING INTEREST IN FINGER JOINTING

Response to a single advertisement several months ago in WOOD & WOOD PRODUCTS and several other publications announcing a large machinery firm's finger jointing equipment surpassed anything experienced in the firm's advertising history in wood, metal, or other fields. This is another indication of the growing interest in wood utilization. Be sure to see the article, "Finger Jointing Adds Carload of Usable Lumber per Week," on page 20.

NEW FHA TERMS ERASE PESSIMISM

Immediate consequence of approval of lower FHA down payments, as authorized by '57 Housing Act, was "to erase pessimism . . . and replace it with an optimistic outlook," according to National Association of Home Builders. Bankers, mortgage lenders, however, generally felt the ¼% boost in maximum FHA interest rate (now 5¼%, up from 5%) wasn't enough, came too late. Many experts feel shot-in-arm effect for housing won't be felt until next year; others predict a healthy upturn in starts this fall.

PLAUDITS FOR FORESTRY GROUPS

In its special "applauds" section, Look Magazine recently said: "Among organizations working to preserve our forests, the American Tree Farm System is due considerable credit." Sponsored by American Forest Products Industries, the Tree Farm System certifies and helps care for any three-acre tract of trees protected and harvested according to plan. "The program has helped halt depletion of one of our most important natural resources," says Look.

More than 62% of total expenditures for forest research is supplied by private forest industries, A. C. Foley, chairman, Illinois Forest Industries Committee, states.

Since 1945, thanks to organized methods of prevention and control, number of forest fires annually has been reduced by half in Michigan, M. M. Bergman, Michigan Department of Corservation, reports.

SEVENTH RECORD PULPWOOD YEAR

For the seventh consecutive year, the South in '56 harvested a record quantity of pulpwood. Production for 12 southern states was 20,344,900 cords—57% of the nation's production.

The Forest History Foundation, Inc., 2706 W. Seventh Blvd., St. Paul, Minn., invites the industry to join in efforts to "help preserve the records of the contributions wood has made to America's growth."

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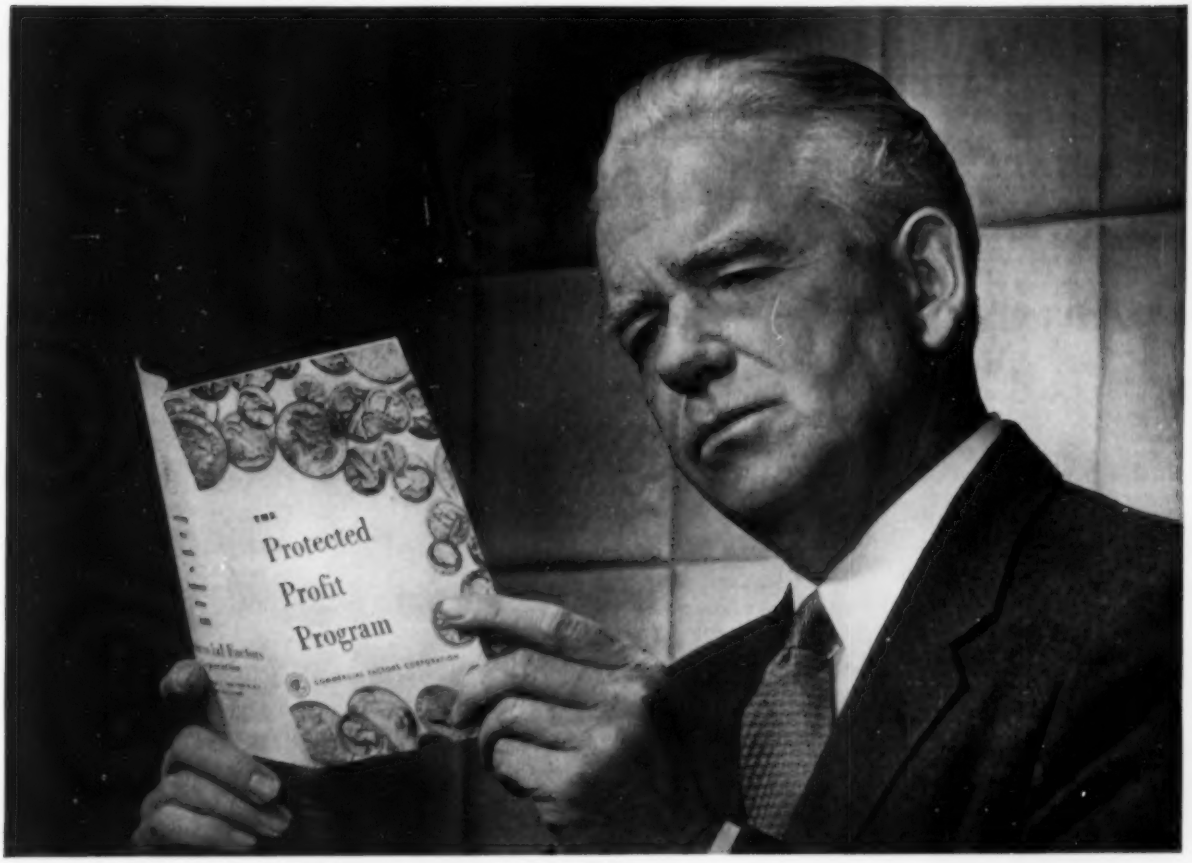


this brochure tells you

How To Forget Credit Problems Forever

yet build your business safely, rapidly and comfortably

Credit problems, bad debts and slow collections are very likely taking up more and more of your time. Commercial Factors' "Protected Profit Program" lets you convert this non-productive time into profit-building activity. Credit protection is one of the chief features of this program, but there are many others.

This is what the "Protected Profit Program" will do for you.

1. Through this program you will always have cash available as you need it. You will be able to expand your business safely, comfortably and rapidly, without adding one cent to your investment.

2. You will never again be concerned about slow collections, poor credit risks or bad debts. This will allow you to sell to a broader segment of the market.

3. You will be able to handle a larger volume without tieing up your working capital or borrowing large sums of money.

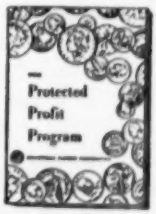
4. You will be shown many opportunities for additional profit, both in your current markets and in new areas.

5. You will save many of your present fixed and variable costs without impairing your efficiency of operations.

There are many other advantages, too. You owe it to your company's future profit to investigate all the unique features of this plan. The descriptive brochure illustrated contains full details.

Send today for free brochure

We will be pleased to send you, without any cost or obligation on your part, a copy of this brochure that describes all the key features of the "Protected Profit Program"... and offers valuable suggestions on how to expand your business and safeguard your profits.



For your copy, phone or write to Mr. G. D. Moran, V. P., Dept. P-9.

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HARDWOOD PRICES

A partial list of prices used by special permission from Hardwood Market Report, P.O. Box 5710, Memphis 4, Tenn. For complete weekly list consult above. Copyright August 10, 1957.

SOUTHERN HARDWOODS

F.O.B. mills—Texas and Louisiana area. Estimate of present mill point average market price, to consuming trade on band-sawn Southern Hardwoods in carload quantities, random widths and lengths, rough, air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

ASH—FIRM TEXTURE

	FAS	#1C	#2C
4/4-in.	170	130	65
6/4-in.	182	138	68
8/4-in.	205	160	82

BASSWOOD

4/4-in.	165	130	84
6/4-in.	170	135	87
8/4-in.	180	145	90

BEECH

4/4-in.	133	107	54
6/4-in.	145	115	60
8/4-in.	167	127	72

CHERRY

4/4-in.	260	185	95
6/4-in.	280	205	109
8/4-in.	290	215	114

RED GUM—PLAIN

4/4-in.	205	135	75
6/4-in.	230	155	78

RED GUM—QUARTERED

4/4-in.	229	155	75
6/4-in.	250	180	90
8/4-in.	264	195	95

SAP GUM—PLAIN

4/4-in.	111	91	49
6/4-in.	132	112	53
8/4-in.	145	120	—

HACKBERRY

4/4-in.	125	105	68
6/4-in.	139	119	79
8/4-in.	155	130	85

SOFT MAPLE—WHAD

4/4-in.	145	125	70
6/4-in.	152	127	77
8/4-in.	160	130	80

SOFT MAPLE—WHND

4/4-in.	123	98	63
6/4-in.	135	115	75
8/4-in.	140	120	80

RED OAK—PLAIN

4/4-in.	187	90	60
6/4-in.	200	136	75
8/4-in.	210	145	—

WHITE OAK—PLAIN

4/4-in.	192	102	60
6/4-in.	205	140	75
8/4-in.	220	150	—

PECAN

4/4-in.	120	100	48
6/4-in.	137	117	56
8/4-in.	155	130	65

POPLAR—PLAIN

	FAS	S&S	#1C
4/4-in.	170	160	127
6/4-in.	185	175	140
8/4-in.	205	195	150

TUPELO—PLAIN

TUF TEXTURE—DEEP SWAMP

4/4-in.	120	100	49
6/4-in.	139	119	53
8/4-in.	150	125	—

WILLOW

4/4-in.	130	95	55
6/4-in.	140	110	65
8/4-in.	150	115	70

APPALACHIAN HARDWOODS

F.O.B. mills—Johnson City, Tennessee area. Estimate of present mill point average market prices on sales to consuming trade on band-sawn Appalachian Hardwoods in carload quantities, random widths and lengths, rough, air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars upper bracket grades premiums are frequently paid.

TOUGH ASH

	FAS	FIF	#1C	#2C
4/4-in.	170	160	125	65
6/4-in.	190	180	130	75
8/4-in.	200	190	150	85

BASSWOOD #2A

4/4-in.	185	175	130	85
6/4-in.	195	185	142	88
8/4-in.	205	195	152	96

BEECH #2C

4/4-in.	150	140	115	62
6/4-in.	165	155	130	72
8/4-in.	185	175	145	92

BIRCH

4/4-in.	270	260	150	80
6/4-in.	280	270	160	85
8/4-in.	285	275	165	90

CHERRY

4/4-in.	270	260	185	95
6/4-in.	295	285	210	110
8/4-in.	320	310	235	120

CHESTNUT

	FAS WHND	#1C&B WHND	#1C WHND	SW
4/4-in.	200	175	160	95
6/4-in.	210	185	170	105
8/4-in.	215	190	175	110

HICKORY

	FAS	FIF	#1C	#2C
4/4-in.	125	115	78	53
6/4-in.	145	135	87	58
8/4-in.	170	160	100	66

HARD MAPLE

4/4-in.	240	230	160	75
6/4-in.	255	245	170	80
8/4-in.	265	255	180	85

SOFT MAPLE

4/4-in.	180	170	125	67
6/4-in.	190	180	145	70
8/4-in.	195	185	150	75

RED OAK—PLAIN

4/4-in.	200	190	115	67
6/4-in.	210	200	140	—
8/4-in.	230	220	150	—

WHITE OAK—PLAIN

4/4-in.	220	210	120	67
6/4-in.	240	230	150	—
8/4-in.	255	245	160	—

WHITE OAK—WHND

	FAS	FIF	C&B	#1C
4/4-in.	135	125	105	95
6/4-in.	165	155	135	125
8/4-in.	180	170	145	135

YELLOW POPLAR

	FAS	FIF	SAPS	#1C
4/4-in.	200	190	180	132
6/4-in.	220	210	200	147
8/4-in.	225	215	205	155

POPLAR SQUARES

	FAS	#1C & 2D
4x4-in.	245	175
6x6-in.	280	190
8x8-in.	340	240

WALNUT—STEAM TREATED

	FAS 8" & up	FIF 8" & up	#1C	#2C
4/4-in.	440	400	200	70
6/4-in.	465	425	255	90
8/4-in.	490	450	280	100

Walnut list reflects average fob mill, all areas. Basing point not generally observed.

NORTHERN HARDWOODS

Estimate of present f.o.b. Wausau, Wisconsin mill point average market prices to consuming trade on band-sawn Northern Hardwoods in carload quantities, random widths and lengths, rough, air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

BROWN ASH

	FAS	#1C	#2C
4/4-in.	190	140	78
6/4-in.	200	150	90
8/4-in.	205	155	95

BASSWOOD

4/4-in.	201	132	82
6/4-in.	211	146	95
8/4-in.	216	166	108

BEECH

4/4-in.	160	115	73
6/4-in.	170	125	75
8/4-in.	175	130	80

BIRCH

4/4-in.	326	163	90
6/4-in.	335	180	100
8/4-in.	340	195	112

ROCK ELM

4/4-in.	160	140	68
6/4-in.	170	150	78
8/4-in.	175	160	81

SOFT ELM

4/4-in.	170	135	65
6/4-in.	180	145	77
8/4-in.	185	150	87

HARD MAPLE

4/4-in.	235	155	83
6/4-in.	245	170	90
8/4-in.	270	180	93

SOFT MAPLE

4/4-in.	170	135	93
6/4-in.	180	140	90
8/4-in.	195	150	98

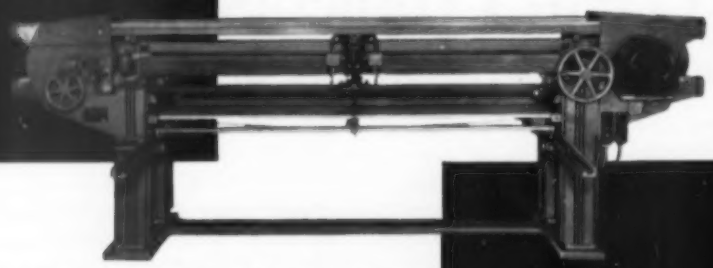
RED OAK

4/4-in.	201	135	83
6/4-in.	211	155	90
8/4-in.	221	165	92

MODEL D-1 SANDER-POLISHER

Cuts Production Costs

SAVE UP TO 50% ON STOCK HANDLING



Cuts-down, eliminates drum sander on veneered stock, polishes to superior quality ready for the finishing room in a single operation. No sponging, cutting-through or raised grain. 'Floating' stroker keeps operator at peak efficiency.

WRITE FOR FULL DETAILS TODAY

Department 12

High-speed single-belt unit available as Model D.

- REVERSIBLE
- HIGH-SPEED
- DUST-PROOF
- SEMI-AUTOMATIC
- CAPACITY TO 10' 8"
- DOUBLE-BELT

The Oakley Co. SINCE 1934

BRISTOL TENNESSEE

HOW MANY PEOPLE SHARE YOUR DESK, CHAIR AND PHONE?

Chances are, you don't share them with anyone. Then why share copies of WOOD & WOOD PRODUCTS with others on a routing list? Why lose valuable time . . . go through worn-out, torn-out copies . . . when you can get *your own* copy each month—delivered right from the press to your business or home?

Just fill in and mail one of the handy order forms bound in this issue and get your own copy of WOOD & WOOD PRODUCTS fresh and on time. Read it without being rushed . . . tear out articles of importance . . . file issues at your desk for permanent reference. (See handy order forms at right.

Tax-deductible . . . filled with dozens of practical ideas . . . a personal WOOD & WOOD PRODUCTS subscription is like "money in the bank"—handy, useful and convenient always. Ask any reader!

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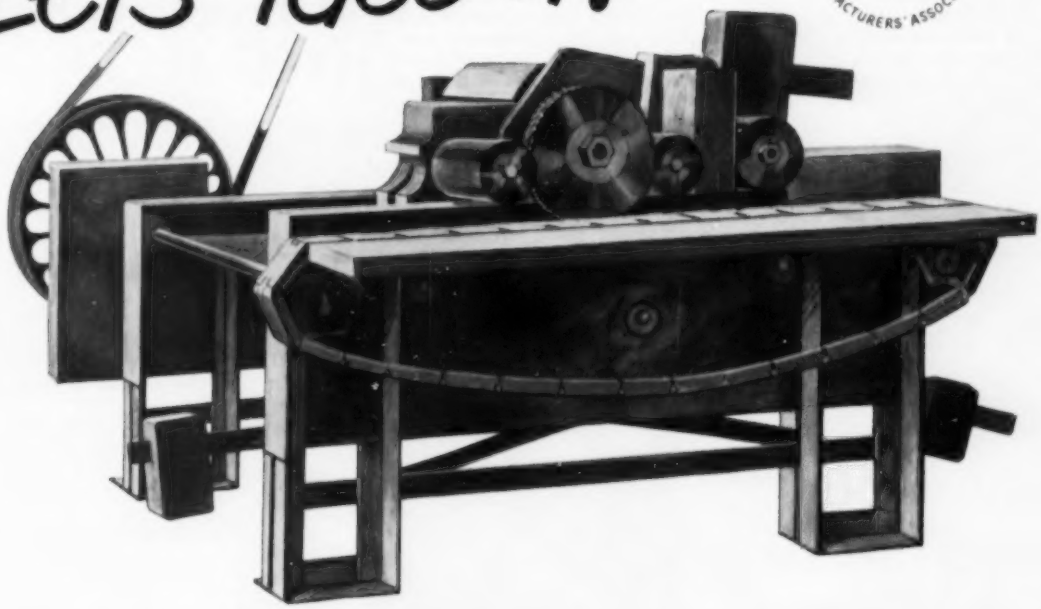
Let's Face It!



YOUR OBSOLETE MACHINES ARE YOUR COMPETITOR'S BEST FRIENDS

In the relentless battle for business you're giving your competitors a big assist by hanging on to those sluggard, obsolete machines that are slowing down production. They may have been the pride of the plant in '28 but today they send costs soaring . . . price your product right out of your markets.

Get rid of those old clunkers masquerading as production machines. See how new modern machines can help you produce more profitably. Never before has such a variety of modern, precision machinery been available. Get your machine replacement program started now! Send in this coupon today.

WOODWORKING MACHINERY MANUFACTURERS ASS'N.
1900 ARCH ST., PHILADELPHIA, PA.

Please send me further information. I am interested in the following types of machinery _____

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Put a profit in your woodworking with MODERN MACHINES

WOODWORKING MACHINERY MANUFACTURERS ASSOCIATION

1900 Arch Street, Philadelphia, Pennsylvania

LETTERS to the Editor:

Sorry—Our Pencil Slipped!

Editor: We have been pleased to note your many editorials, such as "It's Later Than You Think" and "Time to Fight for Wood Markets," urging the industry to take an active interest in promoting wood. In your July issue you again champion the cause of wood stating that we should "promote the virtures and advantages of wood as wood" and to "move over from the defensive to the offensive side of all wood product interests; hope to make progress in the vital struggle to protect, preserve and build wood markets against the increasing in-roads of plastics, metals and other competitive materials."

We heartily endorse your program. Imagine our chagrin, then, to read three pages later, last paragraph, page 22, in the article on a new push button mill, the following—"result of the planning is a fire proof building of prefabricated steel framework . . ."

We are sure that you are aware of the campaign which the structural wood industry and the American Institute of Timber Construction is conducting in fighting the fallacy which has been built up over many years regarding the superiority of steel versus wood.*

J. C. Van Dyke, Vice-Pres.
Unit Structures, Inc.
Peshtigo, Wis.

***Editor's Note.**—We have published plenty of evidence in the past that a steel building is not necessarily "a fire proof building," and all members of our staff should know better. Mistakes will happen though. To you and our other friends in the industry, our apologies and promise to exercise stricter vigilance in such matters in the future.*

FOR THE FINEST IN WOODWORK . . .

PICKERING
"GOLD MEDAL"
LUMBER

Produced from high-altitude timber in one of the West's most modern mills, Pickering "GOLD MEDAL" is top quality lumber—famous for its fine grain, soft, mellow texture, excellent workability. Whatever you make—millwork, prefabricated houses, patterns, pencils, boxes, etc.—if it's a quality finished product you want, use Pickering "GOLD MEDAL" Lumber—the best since 1894. Precision-sized. Kiln-dried. Always available on short notice.

SUGAR AND PONDEROSA PINE
WHITE FIR—INCENSE CEDAR

Lumber—Cut Stock—Box Shook

Let us send you our color brochure, "Timber," giving a word and picture story of our timber resources and complete manufacturing facilities.

Lumber Corporation

The Pickering Trade Mark is your assurance of quality.

PICKERING LUMBER CORPORATION
Standard, California
(Near Sonora, Calif.)
Telephone
Sonora JE 2-7141
Teletype
Sonora 116-U

Particle Board Engineers

Editor: In the June 1957 issue there was an article on particle board manufacturing indicating that the engineering and planning was done by the Production Development Co. of North Carolina. We would appreciate it if you would furnish us with this company's address so that we could contact them regarding their services.

H. O. Warde, Pres.
Sierra Prefabricators, Inc.
Burbank, Calif.

WOOD Award Winner

Editor: I interrupted my vacation to return to New Haven for a day and found your letter of July 8. As you can well imagine, we were most delighted that the 1957 WOOD Award was granted to Bob Youngs, and we are greatly pleased to have a duplicate copy of the certificate to include in our gallery of Yale winners.

George A. Garratt, Dean
Yale University
School of Forestry
New Haven, Conn.

Automatic Finishing Machine

Editor: I have been a constant reader of your magazine and have found some very interesting articles; that is why I am writing you in the belief that you can help me with an automation problem.

We are finishing rules using the same process that has been in practice for the past 75 years. As we are manufacturing a penny item and the cost in labor and materials has constantly increased, we feel we must eliminate some of the old fashioned ways of finishing our product.

We would like to find someone who can build us an automatic finishing machine to use with a lacquer or quick dry varnish and a conveyor so that we can finish approximately 50,000 to 100,000 twelve-inch rules per day.

C. P. Piscitelli, Pres.
Seneca Novelty Co., Inc.
Seneca Falls, N. Y.

Chipboard from Wood Waste

Editor: Enclosed please find payment for one copy of "Chipboard from Wood Waste." I am and have been interested for the past few years in wood waste

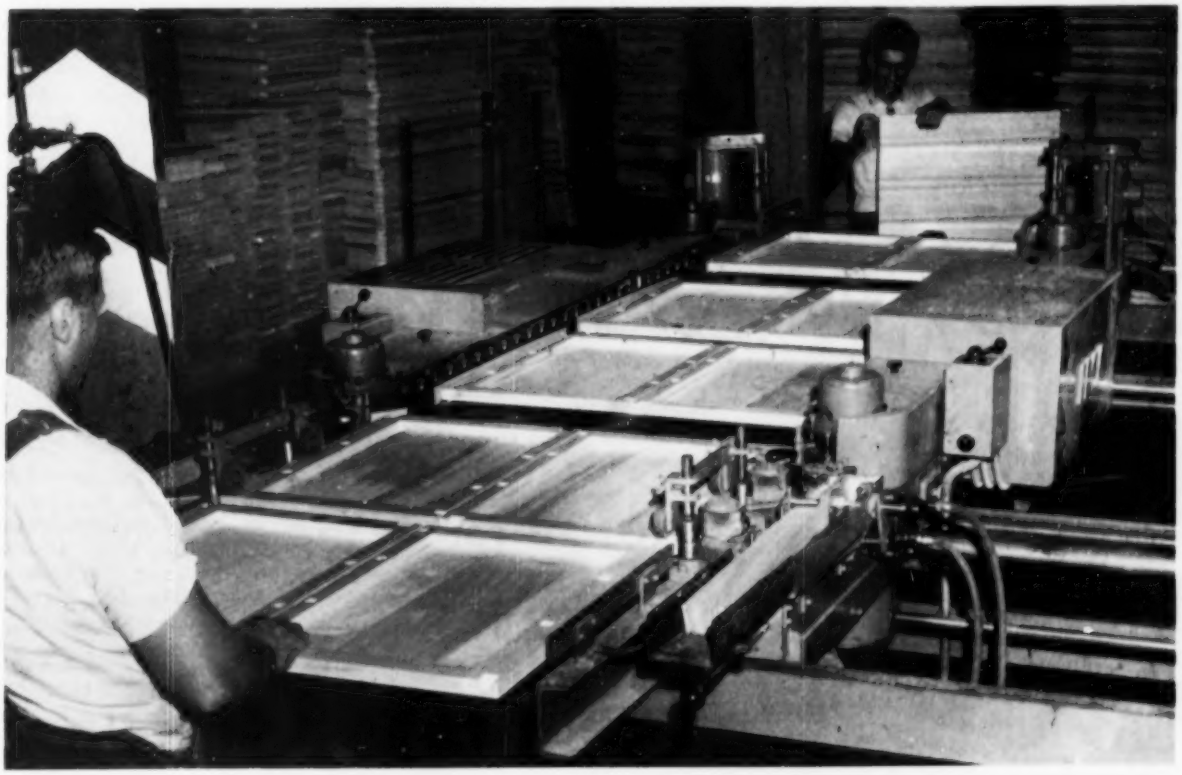
Continued on Page 16

PRODEVCO

presents the

IMA CONTINUOUS FEED VENEER EDGE BANDER

Edge Bands and Trims Up to 10,000 Panels Per Day!



IMA Edge Bander in operation at Stanley Furniture Co.

STANLEY FURNITURE COMPANY

Manufacturers

FURNITURE

STANLEYTOWN, VA.

BASSETT, VA.

August 5, 1957

Production Development Company, Inc.
2404 Hillsboro Street
Raleigh, North Carolina

Gentlemen:

Our second IMA continuous feed veneer edge bander arrived today, and we are pleased to have this machine delivered in time for the opening of our new plant.

We placed our first IMA edge bander in operation in January of this year and since that date it has been performing the work normally done by five conventional edge banders.

You might be interested to know that our maintenance cost on this machine has been extremely low and has been confined principally to lubrication.

Yours very truly,

STANLEY FURNITURE COMPANY

H. D. Stanley, Jr.
Executive Vice President

For edge-banding wood veneer or plastic strips from 1/42" up to 1/8" thick, nothing beats the IMA Continuous Feed Veneer Edge Banding and Trimming Machine. Ask Stanley Furniture Co., Stanleytown, Va., which has just received its second IMA unit. (See letter at left.)

IMA automatically feeds veneer strips from hoppers on either or both sides as panels are fed through machine. After gluing, oversize veneer is automatically trimmed by four fine-tooth veneer saws set to compensate for thickness variations and warping.

The machine is adjustable for panels ranging from 6" to 72" in width, from $\frac{3}{8}$" to $1\frac{1}{2}$" thick, and from 12" minimum to unlimited lengths. Feed speed adjustable up to 120 f.p.m. Heat adjustable from room temperature to 550°F.

Equipment features: Drive Motor—2 h.p. 60 cycle, 220-440-550 V, 1800 r.p.m. Trimming Motors—½ h.p. 60 cycle, 220-440-550 V, 3600 r.p.m. Heating units—10 kw. each, 60 cycle, 220-440-550 V.

For quotation, other details—write or wire

PRODUCTION DEVELOPMENT CO.

INCORPORATED

2404 Hillsboro Street

Raleigh, N. C.

DRY KILN CORNER

Be sure to pass this issue along to your dry kiln operator and mark this page—devoted to readers' problems in kiln drying and related seasoning questions—for his special attention. If you—or your dry kiln operator—have a problem in any phase of this complex subject, send it to WOOD & WOOD PRODUCTS, 139 N. Clark St., Chicago 2, Ill. Our experts will help you!—*The Editors.*

Equalization and Conditioning

Question: Is there any difference in the equalization treatment and the conditioning treatment? We have always opened the steam spray wide for several hours at the end of a kiln run in order to relieve casehardening. Is this the same treatment as equalization and conditioning?

J.O.T.-Pa.

Answer: This method of steaming is not the same as the equalization and conditioning treatments. It is an older form of treatment used before the advent of the newer high temperature, low relative humidity schedules. In using these newer schedules the equalization treatment is used at the end of drying in order to bring all moisture contents within a desired and pre-determined grouping of moisture percentages. For example, in drying a charge of birch lumber green from the saw the final moisture contents may vary from 3 to 10%. A grouping of 5 to 7% is wanted. The kiln is then set to an equilibrium moisture content of 5% and kept at this until the lumber has equalized at the desired grouping.

The conditioning treatment is then started and continued until the lumber is free from casehardening.

Specific instructions in the application of these treatments are given in Bulletins No. D 1791 and Technical Note No. 213, Forest Products Laboratory, Madison, Wis.

Twisting and Warping

Question: We use a considerable quantity of a type of lumber which twists and warps badly during kiln drying. We have tried putting weights on top of the loads but this is not very effective. Can you help us on this?

A. L.–Ky.

Answer: This is a problem which concerns all of us who have to do with this type of lumber. The twisting and warping are, in my opinion, the result of the interlocking grain of certain species. This is often increased through the sawing of the log.

In my experience I have found that when a log is sawed parallel to the bark that the twisting and warping is less than when the log is squared up to the small end. In the drying of this type of lumber setting up a rather severe tension set is sometimes recommended.

I have been more successful in stacking the lower two thirds of a kiln truck with this type of lumber, and completing the load with a non-twisting type. This provides a good weight and does away with the job of relieving a severe tension set. Normal equalizing and conditioning treatments can be used.

Most plants use enough various types of wood to select woods for the upper part of the load that have somewhat comparable drying characteristics with the twisting and warping type. You may have to sacrifice some drying time by doing this but it may well be worth the sacrifice when it comes to machining.

NEWMAN K-16
Tilting Arbor **VARIETY SAW**

Rips to 48" wide

DESIGNED for YOUR PROFIT

Handwheel locks both sides of fence simultaneously.

Guard and splitter automatically tilt with saw blade. Guard has anti kick-back fingers.

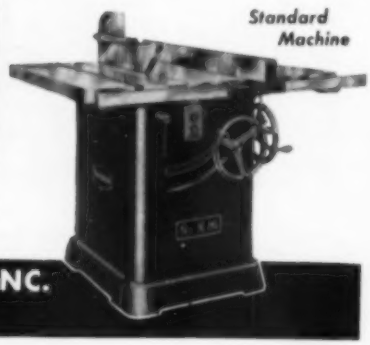
All cast iron base and table.

Direct connected 3600 R. P. M. 5 H. P. motor. Full 45° tilt of saw with positive lock for holding tilt.

Micrometer double faced rip fence with rack and pinion adjustment permanently aligns fence with saw blade and allows cuts to full 48" wide.

Price **$1,090.00** for standard machine. This unusually low price is an introductory offer for a limited time only. $195.00 additional for rack and pinion fence. F. O. B. Greensboro, N. C.

Standard Machine

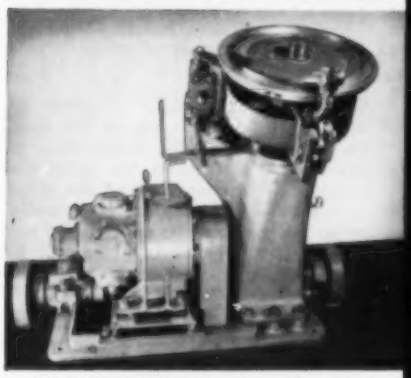


DELIVERY FROM STOCK SUBJECT TO PRIOR SALE. WRITE FOR DESCRIPTIVE LITERATURE AND COMPLETE QUOTATION.

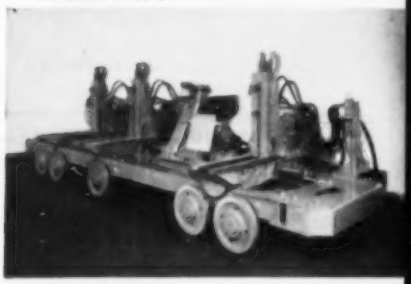
NEWMAN MACHINE CO., INC.
GREENSBORO, N. C.

A WOOD Classified Ad will find Men—Materials—Machinery (See Page 84)

New Filer & Stowell Head Rig Machinery



AIR MOTOR SET WORKS — *Now preferred as the most accurate setting and fastest receding set works. Rugged, simple construction eliminates costly repair. Easy to convert present set works to Filer & Stowell Air Motor Drive Set works. Write for bulletin #301.*



AIR DOG CARRIAGES — *Only Filer & Stowell Air Dog Carriages have the "Dual Movement", which eliminates miscutting by pulling the dogged logs back firmly against the head blocks. No faster dogging mechanism exists than Filer & Stowell inside the knee Air Dogs with top and center teeth.*

SHOT GUN CARRIAGE FEEDS — *Proven on more installations to be the fastest and least costly drive for sawmill carriages to get more lines per minute. Equipped with all the latest safety devices, these guns may be powered by steam or air. Find why smart sawmill operators are going back to this time proven method of driving Log Carriages. Write for Bulletin #303.*

Now . . . increase production of better lumber at lowest cost. Filer & Stowell brings you the most accurate and durable Head Rig Equipment available, with the greatest capacity for more lines per minute.

To eliminate losses from "downtime", the *headache* of all mill men, Filer & Stowell *Head Rig* Machinery is recommended *the world over.*

BAND MILLS — *Only Filer & Stowell Band Mills have all the features needed to fulfill the desire of sawmill operators for the most sensitive and durable Band Mills. Ask for bulletin #300.*

World's largest builders of sawmill machinery since 1856

THE FILER & STOWELL CO.

147 E. Becher Street • Milwaukee 7, Wisconsin

Another new idea from DUO-FAST—bench model, air-driven tackers and staplers for faster work. Mount them singly . . . or in series to multiply your fastening speed! The plant using the 3-head unit shown above reports a saving of 67%. (See column on right.)

The right equipment for every job. Maybe bench model air tackers and staplers can step up production in your plant, too. If not, there are over 150 other stapler/tacker models from which to choose. Your DUO-FAST man will be glad to help you pick the right tool.

The DUO-FAST Free Service Guarantee stands behind every product . . . to save you money . . . to protect you. Why settle for less?

DUO-FAST

Staplers • Tackers • Staples

Case Study W7-3:

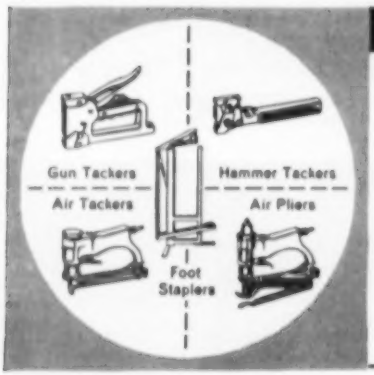
Speeds tacking 67% with multiple-head DUO-FAST bench unit

"...3 times faster than regular air tacking!" That's what this coop manufacturer has to say about the new DUO-FAST triple-head bench model tacking machine you see above.

Problem was to speed up the fastening of center and end dowels into slots in coop rails. This new tacker securely fastens the 3 dowels into place with one move. Tacking heads are quickly adjustable to fit various size coops.

Mail coupon for full case study.

7002



Send for Case Study

FASTENER CORPORATION
3752-58 River Rd., Franklin Park, Ill.

Without obligation, please send us:

☐ DUO-FAST Case Study W7-3 ("From fast to faster . . . with DUO-FAST")

☐ Full data on DUO-FAST stapling tools for the woodworking industry.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

Letters

Continued from Page 12

utilization, so would appreciate any other information you might have in addition to this booklet. Are any present manufacturers of particle board looking for sales and distribution help? Have you a list of firms now making or proposing to make particle board and/or any of the allied products resulting from wood waste?

Lee Greene
Greene Building Materials
Winter Park, Fla.

Olive Wood

Editor: We are making a survey on olive wood. Successful use of this wood has been made in the manufacture of serving forks and spoons. We would like to know all that we can find out about olive wood—what items are being made, where the wood can be secured, and any other pertinent facts. Any help will be deeply appreciated.

D. E. Beebe
Alexander Hamilton Institute
New York, N. Y.

Needs Baling Machine

Editor: I have been trying to find a manufacturer who makes a machine for the baling of shavings on a productive basis. All I have been able to locate are the old handtype machines that have no productive value. Can you help me?

D. Roland Belanger
Belanger Woodworking
Derry, N. H.

COMING EVENTS

Sept. 10-12: First annual conference, National Wooden Pallet Manufacturers Assn., Hugh P. Baker Forest Products Laboratory, State University College of Forestry, Syracuse University, Syracuse, N. Y.

Sept. 16-18: 66th annual meeting, International Concatenated Order of Hoo-Hoo, Dinkler Plaza Hotel, Atlanta, Ga.

Sept. 30 - Oct. 2: Annual convention, American Forestry Assn., Loraine Hotel, Madison, Wis.

Oct. 1-3: 60th annual convention, National Hardwood Lumber Assn., Hotel Sherman, Chicago, Ill.

Oct. 14-19: Fall Market, American Furniture Mart, Chicago.

Oct. 21-24: Wood products section, 1957 National Safety Congress, Conrad Hilton Hotel, Chicago, Ill.

Nov. 4-7: Building Products Exposition, National Retail Lumber Dealers Assn., Philadelphia, Pa.

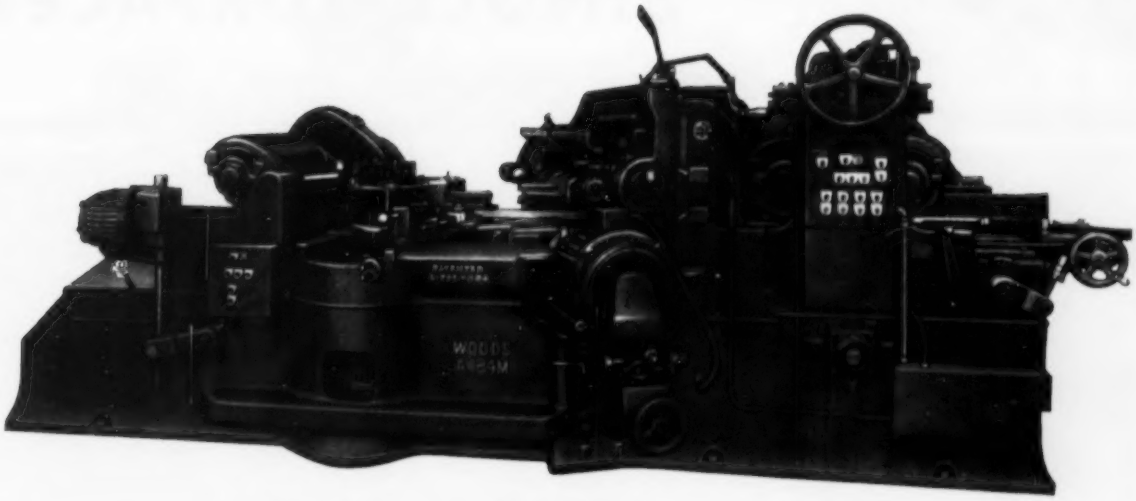
Nov. 10-13: 57th annual meeting, Society of American Foresters, Hotel Syracuse, Syracuse, N. Y.

Jan. 19-23, 1958: 14th annual convention and exposition, National Association of Home Builders, Chicago, Ill.

May 13-17, 1958: American Woodworking Machinery & Equipment Show, Woodworking Machinery Manufacturers' Assn., Winston-Salem, N. C.

Serving the Industry Since 1852

It's Revolutionary!
A-484M DIAGONAL PLANER and MATCHER



Ungrading of all stock, with astonishing improvement in finish on the lower grades now made possible with this revolutionary DIAGONAL PLANER and MATCHER.

DISTINCTIVE FEATURES

- ★ Elimination of sniped ends.
- ★ Smoother finish around knots and cross grain, with less tendency to loosen knots.
- ★ Continuous support of stock on bed plate before and after cut on bottom head.
- ★ Less lead required in guide as angle cutterhead serves to hold stock against the guide fence, preventing side friction, feed roll wear and edge sniping.
- ★ Less power consumption in feeding stock.
- ★ All operating adjustments can be made from the front or working side of machine.
- ★ Wide face helical gears for feed works, assuring continuous tooth mesh and quieter operation.
- ★ Independent quick green stock lift for first bottom feed-in rolls.
- ★ Bottom head cylinder can be pulled out for changing knives without disassembling motor.
- ★ Individual ball bearing housings for all cutting units.
- ★ All ball and roller bearings housed in dustproof housings. Grease lubricants for roll bearings. Regulated wick oil feeders used on all cutting units. Forced feed lubrication for feed gears.

Write today for the A484-M Booklet

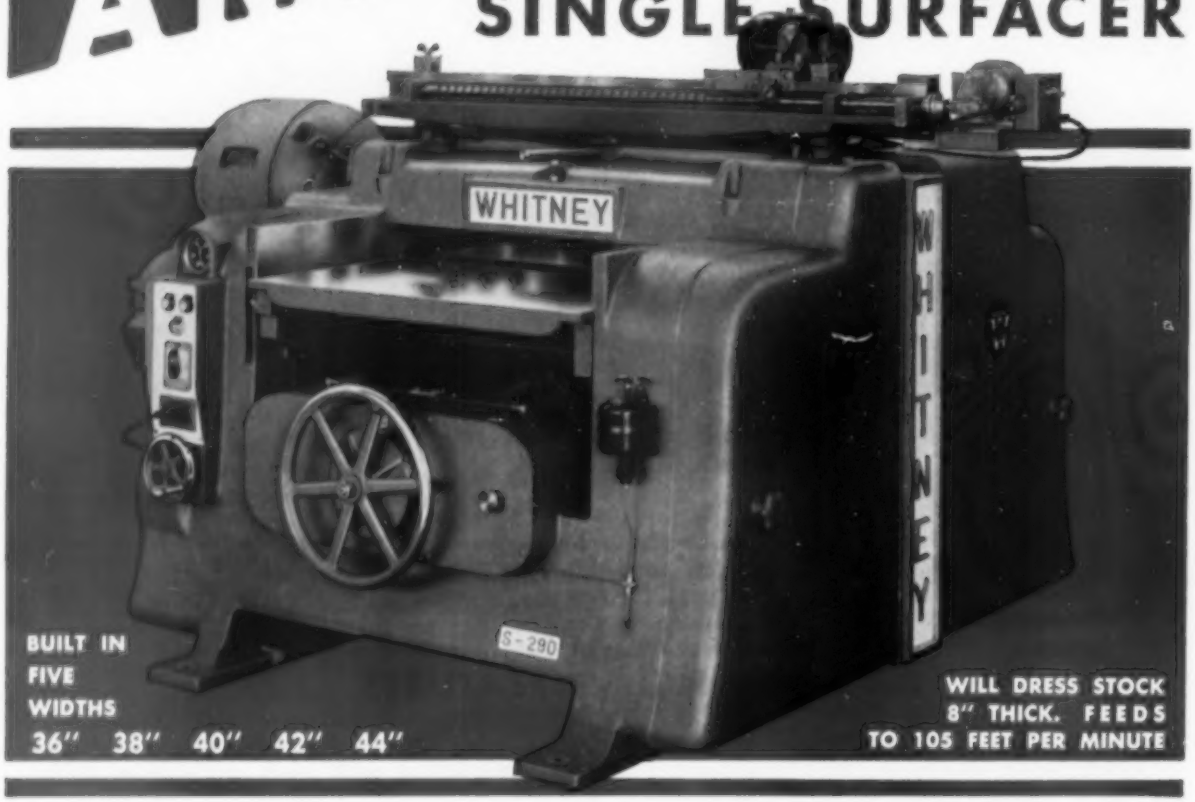
S. A. WOODS MACHINE CO.
27 DAMRELL STREET
BOSTON 27, MASS.

Announcing

The S-290

A NEW WHITNEY

QUALITY PRODUCTION SINGLE SURFACER



This fine new Whitney Planer embodies the most modern features in Single Surfacers. It is built in five widths, 36", 38", 40", 42" and 44" and has 4-knife round cutterhead—will dress stock 8" thick and as short as 14" when not butted or 3" butted.—Available on this new machine are: Variable feed unit giving feeds to 105 feet per minute.—Flexible or sectional chipbreaker.— Centralized adjustments for lower feed rolls, top feed rolls and pressure bar.—Cutterhead brake.—Graduated dial handwheel for .001 inch bed setting.—One-shot lubrication.—Automatic knife grinder.—Over 100 years of experience, experiment, research, and plain down-to-earth "know-how" have gone into the Whitney products. Every feature which has been dictated by good usage in a production planer has been engineered and built into these modern Whitney Planers.

Write today for specifications, prices, and full information on any Whitney machine.

Baxter D. Whitney & Son, Inc.

WHITNEY

PLANERS • AUTOMATIC SHAPERS • HAND SHAPERS • FACERS
VARIETY SAWS • MORTISERS • BACK KNIFE LATHES

WINCHENDON MASSACHUSETTS U.S.A. GREENSBORO NORTH CAROLINA

Tell our advertisers you saw it in **WOOD and WOOD PRODUCTS**

Try the "Grass Roots" Approach!

When that little boy recently lost his life by touching a metal television cabinet, no one said, "If it had been made of wood, as it should, the little fellow would be alive today." When a certain office building owner spent $100,000 to replace metal windows, nobody pointed to the building across the street where wood windows installed in 1906 are still as good as new.

When someone shouts, "Wood burns!" nobody replies, "Not unless you let trash fires set it to burning." Again, when some sob sister pleads, "Woodman, spare that tree!" who takes the trouble to point out, "We are *growing* forests, not despoiling them." When someone reverently exclaims, "This tree is 300 years old," does anyone reply, "Yes, and we can show you wood beams older than that, and they are still on the job." Similarly, when they say, "Wood rots," who answers, "Only when you fail to protect it!"

These are some of the cogent arguments voiced by a leader of the new movement for a nationwide wood marketing council which we have discussed on this page recently. They sharply point up the need for industry-wide action "to enhance the position of wood in our markets, regardless of species."

This is the cause for which we have beaten the drum in countless editorials over the years. It's the cause for which we shall continue our efforts to rally industrywide support. It's a cause that's good for wood—and for all who have a stake in wood. Perhaps most important of all, it's a cause that is good for the consumer. The consumer, remember is not married to wood. Consequently, he must be reminded of the virtues and advantages of *wood as wood*, lest he succumb to the wiles of the big-spending, high-sounding propagandists for competitive materials. But who and how to do it?

We hear that the determined little group of lumber producers, salesmen and wholesalers who have been beating the bushes in recent months in behalf of the proposed "National Council for Lumber Marketing" (a tentative title which should eventually be broadened out) are making encouraging progress. We hear, too, that efforts are being undertaken by others to "guinea pig" the "grass roots" approach to the problem of promoting and publicizing wood which we proposed in a series of editorials advocating an annual event designed to focus public attention on wood. (See WOOD & WOOD PRODUCTS, Nov., 1956 through March, 1957.)

The "grass roots" approach may yet prove to be the most expedient means of furthering the cause of wood in the marketplace. It does not involve a huge multi-million dollar television program such as those of the steel and aluminum interests. Each industry group could still promote its own product, but all, identifying themselves with the national activity by a single emblem or slogan, would be promoting *wood*. Every company that makes or sells a wood product would tie in locally, pushing for observance of the wood products event by public proclamation, by local television, radio and newspaper interests, by displays in bank and theater lobbies, by holding "open house" at the plant, by civic and women's club talks, school programs, and similar easy-to-organize, inexpensive activities.

Thus each community and the surrounding area would receive a better understanding and appreciation of the contribution which wood, the basic material, the individual establishment and its employees make to the region. They would also learn why and how wood is better and what the countless products of our forests and the size and scope of our industry mean to the national economy.

The cumulative impact of all these localized efforts concentrated in a single week's co-ordinated program would be tremendous—and whatever else was done in a national effort would be the frosting on the cake. Try the "grass roots" approach in your area and see!

EFFICIENT FINGER JOINTING system saves firm 6% each eight-hour shift which adds up to a carload of additional raw material.

PRODUCTION IMAGINATION, one of big reasons for Cascade Wood Product's success, led to development of continuous, steel-topped table for taking stock from ripsaws to and from cutoff saws. Cut material is removed for stacking, waste goes into chute to hog.

Finger Jointing Adds Carload of Usable Lumber per Week

Skilled men, new, efficient equipment, genuine quality control add up to increasing profits for Cascade Wood Products

WRIGHT SCOVILLE, president, led firm from 10,000 bd. ft. per day specialty plant in 1946 to a quality window-door frame factory which today employs 125 and uses 1 million bd. ft. of shop lumber per month.

By BILL JONES

HORATIO ALGERS of the sawdust factories are becoming as common as lower offers from a wholesaler. Trade journals are filled with "From Peavey to "Jaguar" and "He started with nothing—in two short years he tripled it."

Let's face it. On the postwar market anyone with less than four thumbs on one hand and sufficient ingenuity to operate a pump handle has been cleaning up. Little wonder, then, that an obituary column of the forest products plants covering the past six months would resemble a Manhattan telephone directory.

Why, then, in the midst of all this carnage we find a plant of modest proportions whirring smoothly along on two shifts six days a week—with an order file pushing out in front by four months and orders still coming in? No—they aren't giving their product away. They're not even offering Green Stamps.

When you look this plant over you are surprised to find that it contains

SHORT ONES to be made into long ones come out of second finger jointer and are fed into assembly machine at left which produces continuous board.

JOINTED MATERIAL coming out of assembly machine is automatically cut to predetermined length. Lumber goes on pallets for delivery to moulding department.

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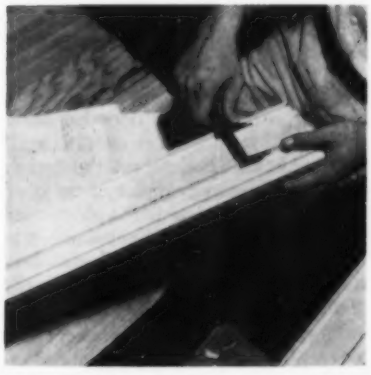
BATTERY OF RIPSAWS at head of production line handles lumber shipped in by rail

ONE OF THREE 8 in.. moulders for fabricating stock received from cutting and finger jointing departments.



EVERY ITEM is made from drawing, dimensions are checked six times during manufacture, and each check is initialed by department foreman as part of quality control program.

BUNDLED FRAME SETS emerge from preservative dip tank, another insurance of top quality products.

the same ingredients as any other. After all, only three ingredients are required:– *people*, *raw material*, and *equipment*. So let's break these down and see what makes the difference at Cascade Wood Products, Medford, Ore.

PEOPLE. A very affable fellow named Wright A. Scoville came out of college in 1940 and spent seven years as an officer in the United States Army. During this time he learned thoroughly the principals of leadership. Putting this knowledge to work, he surrounded himself with a group of men experienced in all phases of the manufacture of wood products, and founded the company. As the plant has grown, every addition to the personnel has been made with a watchful eye on each individual's capabilities for promotion.

RAW MATERIAL. During the first years of existence these people cut up redwood, and made a line of outdoor furniture. This proved to be a highly seasonal affair and also extremely competitive. In order to fill in the off season, the pine cut stock market was explored with good results. Therefore, present products have resulted from a combination of the availability of a satisfactory quantity of good shop grades of Ponderosa and sugar pine and the retention of a satisfactory market for inside door frames, outside jambs, and window frames. The mill is geographically situated to take advantage of a favorable transit rate, and while the majority of the shop lumber is obtained locally, Cascade has brought in material from as far as 400 miles.

EQUIPMENT. The policy at Cascade Wood Products has been to purchase new machinery wherever possible in order to get the advantage of the latest technological advances in equipment and also, of course, to eliminate acquiring someone else's cast-off headaches. A considerable amount of automatic machinery is in use, and more is contemplated. Constant studies are being made of new methods and equipment for further reduction of cost or for greater utilization of raw material.

Now let's see how the above ingredients are put together to produce this vanishing part of Americana known as *profit*. A lot of mills will tell you how much they cut, but it isn't always easy to find out what percentage the actual finished product represents in terms of yield from raw material.

Cascade Wood Products has a very efficient cutting department in which

Continued on Page 58

Photo Courtesy Perkins Glue Co.

GREAT DIMENSIONAL STABILITY is one big advantage of mesh formed by interlocked pine strips "welded" together and to stiles, rails in hollow core door at Curtis Companies, Inc., New London, Wis.

The Case for Hollow Cores

Here are 13 attributes to look for in selecting material for flexible, economical hollow core construction

By RALPH CASSELMAN
President
Washington Door Company
Washington, N. J.

HOLLOW CORES for wood doors and panels have long been a subject of peculiar fascination and a challenge to resourcefulness. It is worthy of very particular interest to note in how many and in what different ways the problem of the economical light-weight core has been handled.

In order to be specific, in this paper our definition of hollow cores in wood panels or doors will be limited to those comprising relatively large spaces or cells separated or bounded by elements perpendicular to the faces and large and strong enough in bulk to occupy only a small fraction of the core's volume.

This definition excludes honeycomb whose cells are small and whose walls are thin, and resin foam and balsa wood which are strictly speaking more hollow than solid. It also excludes extruded chipcore even if molded with large open flutes.

It might be thought that by now the process of natural selection would have reduced the designs to not more than a few, but this is not the case.

Grids, rings, bars, slats, blocks, ladders, T's, V's, trellises, bows, arches, and herringbones are made from wood, balsa, insulating board, fiber, veneer, chipboard, corrugated board and paper by sawing, slicing, planing, slotting, molding, rolling, gluing, binding, and tacking. Any method would seem to be legal for keeping the face panels of a hollow core door in position.

Not all of the constructions are equally satisfactory, but in view of the progress made, we have acquired great faith in the general principle of the hollow core as we know it today, and believe it has advantage over other methods now proposed to accomplish a similar purpose.

No other materials or constructions have the flexibility, the versatility, the economy, and the many other features of the hollow-core construction. The hollow core has made the flush door practical and the flush door has displaced all other doors by a ratio of five to one.

Since the hollow-core flush door was first made in a satisfactory manner a little more than 20 years ago, well over a hundred million such doors have been made. This door has been well suited to modern decoration and, in fact, has helped to set the trend. Once the clean appearance of the door was fully appreciated, the desire for similar walls grew stronger and a tremendous upsurge in wood paneling resulted—all to the substantial benefit of the woodworking industry.

Since the hollow-core concept has accomplished all this, we might wonder how vulnerable it is to displacement and what qualities would be necessary to a successor.

First we shall list the desirable attributes of a hollow-core material or its substitute. It is understood we are considering as a prime example the interior core of a hollow-core door. The wood frame comprising stiles, rails, and lock block is not included.

The materials should be:

(1) Economical—material cost of about 20c and prepared cost of 30c for an average door is probably maximum under present conditions.

(2) Workable—capable of being easily dimensioned in length, width, and thickness, preferably with ordinary woodworking machinery or inexpensive equipment.

(3) Fast handling—quick processing is essential in reducing costs, investment, space and rendering service.

(4) Convenient in form and size—sheets, rolls, slats, and blocks are easiest forms to handle.

(5) Commonly available—distribution through ordinary channels is always a help, particularly during early development stages.

(6) Low in bulk—storage of core materials should be reducible to a minimum.

Continued on Page 73

Arguments for Four Cores

WOOD & WOOD PRODUCTS herewith presents the last two of four articles comprising a printed symposium on cores. Accompanying articles discuss the cases for hollow cores and paper honeycomb core materials.

The August issue discussed the subjects of lumber cores and particle board cores. All presented by experts on their respective subjects, the articles were taken from speeches delivered at the recent American Society of Mechanical Engineers' Wood Industries Conference, at Winston-Salem, N. C.

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The Case for Paper Honeycomb Cores

Details of system for use of paper cores in panels

By R. A. McKAY
Wood Technologist
Brunswick Balke Collender Co.
Marion, Va.

THE BASIC PRINCIPLE of producing honeycomb is that of "blowing-up" a certain quantity of paper to yield a much larger volume of low-density cellular structure.

While there are three different types of honeycomb, each being produced by entirely different methods, that known as the "expanded type" is the one used in the woodworking industry. This type of honeycomb is manufactured from ordinary kraft paper.

Although large quantities of paper honeycomb used in flush-door manufacture are untreated, the majority of stock for furniture production is impregnated with low-solids phenolic resins to improve its strength properties. The kraft paper, after being cut to stock size, is coated with stripes of adhesive. When stacked vertically, the glue lines of one sheet fall between those of the sheet above and below.

After the pads have cured, they are reduced to thin slices by cutting vertically across the stripes of glue. These slices in turn are softened by steaming and then are expanded by drawing the sides apart, producing the characteristic network of hexagonal cells.

After heating to cure the impregnating resins, the expanded sheet is ready for trimming to the dimensions needed for the particular core.

Although the foregoing stages are necessary for the transformation of kraft paper into a ready-to-use piece of honeycomb core stock, they may be divided variously between the basic manufacturer and the consumer.

The latter, depending upon the quantities used, may purchase cut-to-size expanded sheets or he may purchase slices and perform the expanding and sizing or even go one stage further and purchase rough pads to be clipped, expanded and sized.

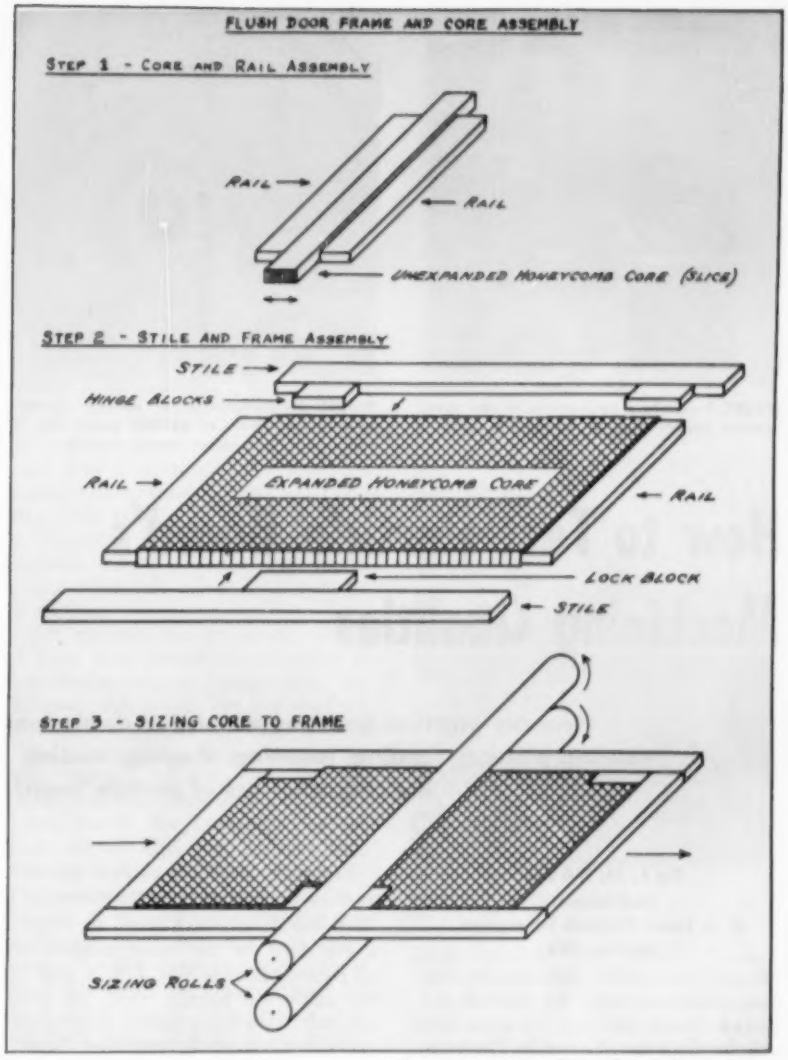

Illustration Courtesy Union Bag & Paper Corp.

THREE STEPS show simple process for use of paper honeycomb core in flush door construction

A wide range of properties may be obtained in paper honeycomb by varying the caliper of the paper, the size of the cells, and the percentage of resin impregnation (or eliminating the resin altogether). In developing its line of school-classroom furniture the author's company originally purchased cured honeycomb produced from 99 lb. (weight per 3000 sq. ft.) paper with 18% resin impregnation and 7/16 in. (across flats) cell size. As experience accumulated and consumption increased, the resin impregnation was reduced, the cell size increased, and the expanding and curing were performed by the batch process at the company plant.

With consumption continuing to increase, an automatic expanding and curing machine will be installed in the near future with the possibility of purchasing the large pads and producing the honeycomb from that point on.

The company uses paper honeycomb for core stock in 19 basic panels of which 9 are for table and desk tops and 10 for various cabinets. This small group of panels is in turn used to make up over 150 different sales items. New uses for paper honeycomb are being continually studied and tested.

The panels currently being constructed fall into two classes; those of three-ply construction having skins of 1/8 in. hardboard and those of five-ply construction having skins of either 1/4 in. sycamore plywood or 1/8 and

Continued on Page 56

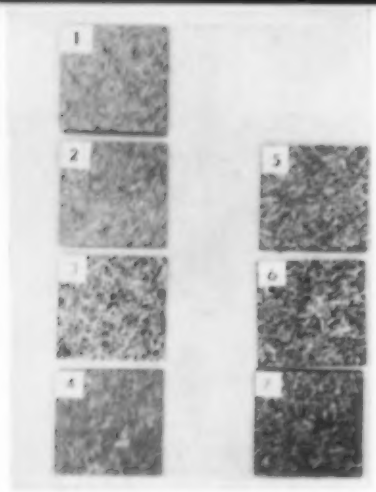

FIGURE 1—Surface appearance of the seven particle boards used in machining tests

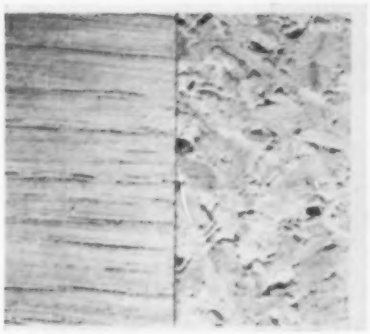

FIGURE 2—Comparison of surface appearance (magnified) of particle board No. 1 with white oak after being sanded

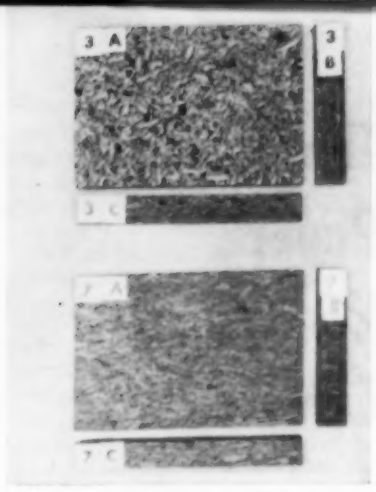

FIGURE 3—Formation of "grain" due to chip orientation in a flat-pressed board, No. 3, and an extruded board, No. 7

How to Test Particle Board's Machining Qualities

Here are practical tests you can use to determine sawing, planing, sanding, tenoning, shaping, routing, drilling characteristics of particle board

By E. M. DAVIS
Technologist,
U. S. Forest Products Laboratory
Madison, Wis.

PROSPECTIVE USERS can employ the tests described here in selecting the particle board that will be most suitable for their specific needs. The tests, conducted at the U.S. Forest Products Laboratory, Madison, Wis., include sawing, planing, tenoning, shaping, routing, and drilling.

The experimental work was done with seven commercial boards from 5/8 to 13/16 in. thick, representing the chief types on the market. Table A lists some characteristics of these boards. Except for boards Nos. 1, 6, and 7, they all weigh close to 40 pounds per cu. ft.

Figure 1 shows the surface appearance of these boards as they are sold. The board numbers used in figure 1 are used for the same samples in all figures. Boards Nos. 1, 2, 3, and 4, the flat-press boards, were all presanded. No. 4 has a smooth decorative surface of especially prepared flakes. The extruded boards, Nos. 5, 6, and 7, have some surface glaze as well as some concentration of fines on the surface.

The material was conditioned to 30% relative humidity before testing.

Particle board texture depends largely on the size and shape of the particles and on the degree of compression. Many boards have numerous openings or voids between particles. These occur through the entire sheet.

Particle board No. 2 is compared with oak in figure 2. Oak is about as coarse-textured as any of our common woods. Both samples were sanded with a coated abrasive of about the same fineness, and the scratches would not be visible without enlargement. The voids in the particle board are much wider and deeper than the pores in the oak.

Because of voids it is often necessary to crossband particle board core stock before applying the finish veneer, in order to prevent "dimples" from "telegraphing" through and showing on the surface. Voids also explain why particle board cores are not used with exposed edges in good quality work.

Particle board grain results from the way the particles are oriented to the broad surface of the board. Figure 3 illustrates typical grain in flat-press and extruded boards.

Samples 3B and 3C are cut from the same flat-press board, 3A, to show end views. Both reveal a general tendency for the particles to become oriented with their plane parallel to the broad surface of the board. They machine alike because they have similar orientation of particles.

Samples 7A, 7B, and 7C, represent an extruded board. In contrast to those of flat-press board, the particles in this board tend to become oriented

TABLE 'A'

Characteristics of Particle Boards Tested for Machining Properties

Board No.	Process	Species used	Approximate weight
			Pounds per cubic foot
1	Flat press	Douglas-fir	31
2	do	do	39
3	do	White pine, including some bark	42
4	do	Douglas-fir, including some bark	38
5	Extrusion	Eastern redcedar, yellow-poplar, sweetgum, maple, elm	38
6	do	Maple, birch, aspen, cherry	45
7	do	Douglas-fir	48

TABLE 'B'

Power Consumed in Sawing Different Particle Boards

Board No.	Process	Approximate weight	Power required to saw
		Pounds per cubic foot	Watts
1	Flat press	31	240
2	do	39	320
3	do	42	320
4	do	38	360
5	Extruded	38	560
6	do	45	720
7	do	48	720

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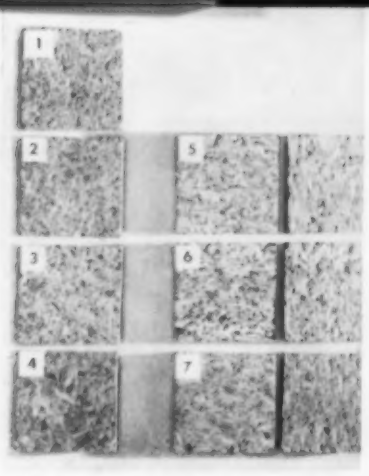

FIGURE 4—Planing quality of sample boards

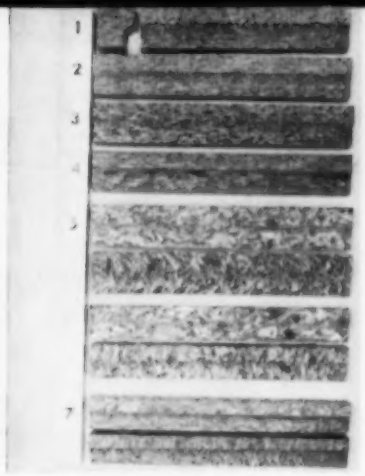

FIGURE 5—Shaping quality

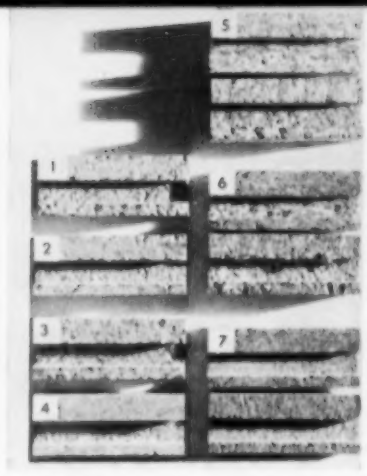

FIGURE 6—Routing quality

with their plane perpendicular to the surface, as is clearly shown in samples 7A and 7B. Sample 7C, however, has a different particle arrangement, because of which adjacent edges in this board machine as differently as end grain and side grain in lumber.

Different amounts of power are required to cut different particle boards, depending on density and other properties. The seven test boards were reduced to a uniform thickness of 5/8 in. before test. An 8-in., carbon-steel circular saw with combination-type teeth was used. Since the first keenness of freshly sharpened saws does not last long, the saw was first run through 200 lin. ft. of particle board in order to dull it slightly and thereby get more typical test results. The saw was set to project 1/2 in. above the test material, which was mechanically fed at 16 f.p.m. Table B shows the results obtained with a recording wattmeter.

In spite of some slight inconsistencies, the expected trend is quite evident; the denser the board, the more power is required. Extruded boards, Nos. 5, 6, and 7, required more power in preparation to weight than the flat-press boards. Three times as much power was needed to cut the heaviest, No. 7, as to cut the lightest, No. 1.

Particle boards are commonly reported to dull cutting tools more rapidly then lumber does. Data of table C show that much may depend on the board under consideration. Table C compares No. 1, the lightest, and No. 7, the heaviest board—both of which happen to be of Douglas-fir—with a common core wood, sweetgum. Power readings were taken on a recording wattmeter at the start and after each 100 lin. ft. of cut. A freshly sharpened saw was used for each material, and the increase in power consumption was taken as a measure of dulling.

For the 400 lin. ft. of cut tested, at least, more power was required to saw the sweetgum lumber than the lighter board, No. 1, but less than the heavier board, No. 7. The rate of dulling, however, was more rapid for both particle boards than for the sweetgum. The power required to saw board No. 1, for instance, was 1.8 times greater after the saw had gone 400 lin. ft. than it was at the start. The power required to saw board No. 7 was 2.17 times greater after the saw had gone 400 ft. but only 1.44 times greater for the sweetgum. Because of the more rapid dulling produced by the particle boards, their power consumption might well be much higher after an hour's sawing.

Although board No. 1 required less power to saw than the sweetgum, it was lighter than most particle boards and may have been an exception to the rule. Any board that exceeds 50 pounds per cu. ft. in weight (and this includes the great majority) is somewhat heavier than sweetgum and substantially heavier than yellow poplar, which are probably the two favorite core woods. The additional power required to saw particle boards is, therefore, due in part to their greater density. Another factor, of course, is the

FIGURE 7—Drilling quality

binder used to make particle boards, usually about 8% by weight.

SAWING. The chief problem met with in sawing particle board is rapid saw dulling. In plants of any size, carbide-tipped saws are usually used to avoid it.

Because of its texture, particle board cannot be expected to saw as smoothly as lumber, but this is relatively inconsequential because the sawed edges are normally concealed in use. Where it is desirable to minimize the chipping out of particles on the corners of sawed edges, the following steps will help considerably: Keep saws sharp, reduce the feed rate, and keep the saw slot as narrow as practical.

On the other hand, if it is desired to compare several different boards, the combination of a dull saw, a fast feed rate, and a wide saw slot will increase the chipping and accentuate any differences that may exist between the different boards.

With extruded boards, sharper corners will generally be produced by first sawing perpendicular to the grain

Continued on Page 60

TABLE 'C'

Comparative Dulling Rates When Sawing Particle Boards of Douglas Fir with Sweetgum Cores

Amount sawed	Power consumed		
Lineal feet	Board No. 1 Watts	Board No. 7 Watts	Sweetgum lumber Watts
0	200	480	360
100	240	600	400
200	280	880	440
300	320	920	520
400	360	1,040	520

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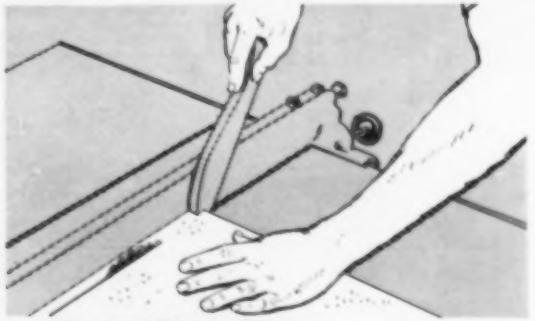

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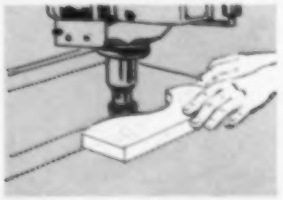

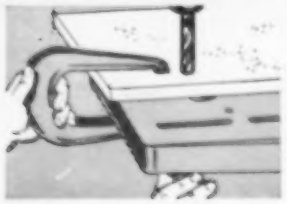

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Two Ways to Lower Costs With Materials Handling

A Norton Co. executive discusses functions of 'cost reduction committee,' and a Talon, Inc. engineer tells necessity of modernization

1. COST REDUCTION COMMITTEE

By T. J. ENGLUND

Industrial Engineering Manager, Norton Company Worcester, Mass.

NORTON COMPANY has had a very effective formal cost reduction program in effect for five years. The plan centers around the assignment of problems to individuals or groups for analysis and recommendations. Of course, this program covers all types of problems among which are many dealing with materials handling. In fact, changes in handling methods often contribute substantially to overall savings derived in a major way from other sources.

From this point I will frequently make reference to committees and subcommittees. I use the word committee advisedly. A committee consisting of representatives from various line and staff departments is not a decision making group. It is limited to making recommendations. Maybe some of you would prefer to call it a taskforce.

Our plan centers around a "cost reduction committee" made up of members of top management. The function of this committee is to review final reports made by individuals or sub-committees.

The actual working area of the system is in the hands of the managers of the various plants. Each manager has his own cost reduction committee made up of middle management and staff. This committee processes new cost reduction ideas and assigns them to individuals or subcommittees. It is responsible for assigning problems by priority, following up on all projects, reviewing verbal reports, and suggesting changes in presentation or approach before the report is presented to the top management cost reduction committee.

Minor problems involving materials handling are usually assigned to an industrial engineer who is well versed in materials handling techniques. This individual must have the ability to go out on the job, work with the foreman, probably call in an engineer from plants engineering department, pool all the ideas, and come up with a recommendation. It is essential that the operating people are involved in solving the problem. In this way the solution has already been "sold" and will work if the recommendation is adopted.

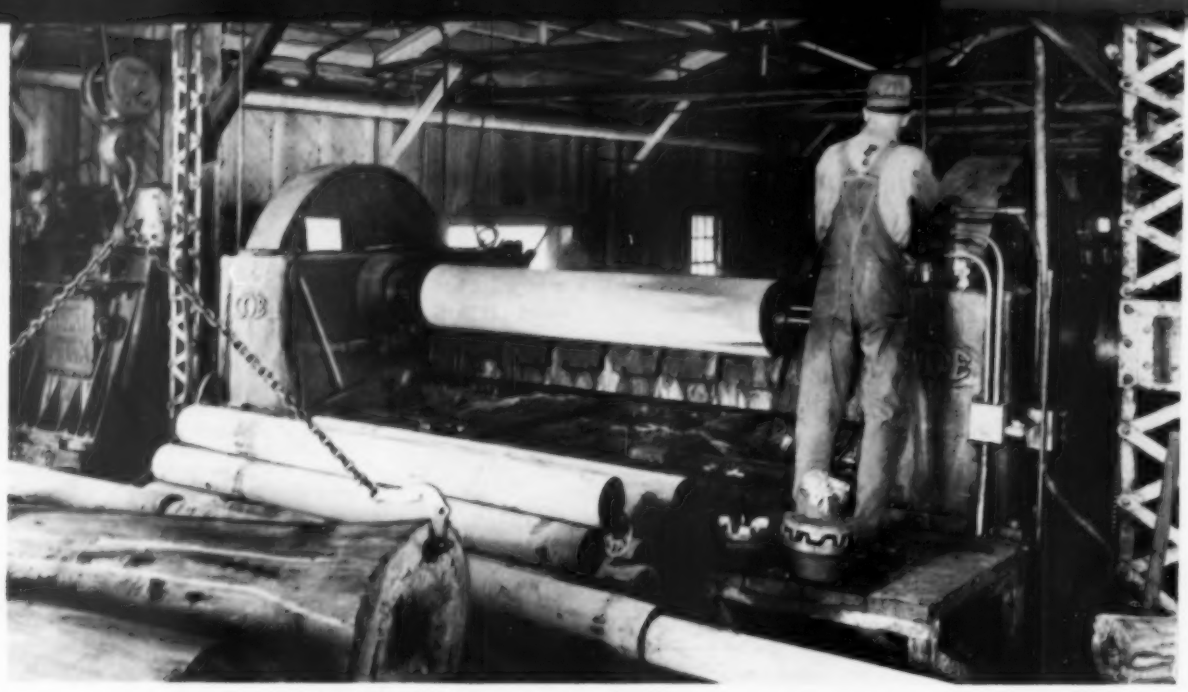
Major problems usually require the services of staff organizations as well as the foreman and his assistants, the superintendent and sometimes even the manager. In these cases a subcommittee is appointed which includes representation from all of the departments involved. A chairman and secretary are appointed.

Even though organizational lines are crossed, the cooperation and interest shown has been amazing. The sub-committee realizes its responsibilities and through the combined ideas of all the talent represented comes up with a solution that pays off. Frequently the problem mushrooms into related problems. It is then necessary to approach these on a priority basis.

The committee approach is especially helpful to the foreman it alleviates any thought in his mind that he might be criticized because he did not think of the idea himself or that he is being "shown up" as operating his department inefficiently. He knows what is going on, he is a part of it and he is in on "getting credit" for new ideas, and is given a voice in setting up improvements.

Proper attitudes and behavior on the part of staff people are essential. Individuals must be able to work well with others. "Brainstorming" is an ef-

Continued on Page 64



VENEER PRODUCTION *from rotary lathe can be checked continuously with lot plot chart system to help insure uniformly thick and smooth veneer.*

A Quality Control Plan for Rotary Veneer Cutting

Lot plot chart system records veneer thicknesses every half hour, warns of changes, insures uniformity at Morrimac Veneers, Inc.

By F. H. ISAACSON
Veneer Cutting Supervisor*

VENEER MANUFACTURING PLANT executives must be sure that the rotary lathe is properly cutting veneer every hour of the day, day-in-and-day-out. Above all, executives need a permanent record which charts the quality of the veneer cut each day in each thickness.

The quality control engineers (Ward Hutchings, S.U.N.Y., College of Forestry, '49, and Robert M. Ralph, '52) have made such control possible with "lot plot charts." Now the executive can be sure that the veneer which may be shipped many miles to the plywood plant, or perhaps put in stock, will be satisfactory when ready to be used. The lot plot charts give an hourly check, day-in-and-day-out.

The first step is to determine the "lathe theoretical green thickness" set up by the manufacturer of the lathe which appears either in the manual or on the lathe drawings. This is the mathematical green thickness of the lathe gears used for each thickness.

The second step is to determine the green thickness tolerances and establish the limits for the lathe operation.

These figures will vary according to the make and model of the lathe, but generally the "green veneer thickness limits" will in most cases be approximately as follows:

Thickness	Green Gear Thickness	+ —	Green Cutting Limits High	Average	Low
1/24	.0435	.002	.045	.043	.041
1/20	.0526	.002	.055	.053	.051
1/16	.0656	.003	.069	.066	.063
1/14	.0732	.003	.077	.074	.071
1/12	.0837	.003	.086	.083	.080
1/9	.1125	.003	.116	.113	.110
1/8	.1321	.003	.135	.132	.129
3/16	.1936	.004	.195	.191	.187
7/32	.2291	.004	.226	.222	.218

The basic theory supported in this paper is that since the lathe is feeding the log into the knife at the specific set rate of the "mathematical" or theoretical green veneer thickness, the green veneer should be coming out of the bar and knife at that same thickness with a small plus or minus tolerance. If the green veneer thickness is not within the "green veneer thickness limits" something is wrong with the lathe or the lathe set-up.

Now the third step is the employment of the quality control engineers' lot plot chart which records four green thickness readings taken every half hour throughout the cutting day. The first four readings are marked "A," the second four readings are marked "B," and so on down the alphabet. The quality control engineer charts each set of readings, filling in the squares from left to right. We present an actual example of a lot plot chart on an eight-hour cutting of 1/9th Bay Poplar at Morrimac Veneers, Inc., Jackson, Miss. (See figure 1).

It is interesting to note here that "green veneer limits" were set up from actual lot plot charts on daily cuts from five lathes at three plants over a three year period. It was possible to synchronize the thickness limits so that the dry thickness of the veneers from each and every lathe and each and every plant were well within the standard thickness specifications.

Such "green lot plot charts" are a constant guide and check for the cutting foreman. The moment a wrong set of gears or a wrong setting is used, the first or "A" readings signal the trouble. Further more, if the lathe gets out of adjustment any part of the day, the danger flag immediately appears from the next readings on the quality control lot plot chart.

If one studies the A, B, C, etc., reading in succession, it is possible to follow the story of the days' cutting at half hour intervals. A check on the

*Jamestown Veneer & Plywood Corp., Jamestown, N. Y.; Pearl City Plywood Corp., Falconer, N. Y.; Morrimac Veneers, Inc., Jackson, Miss.

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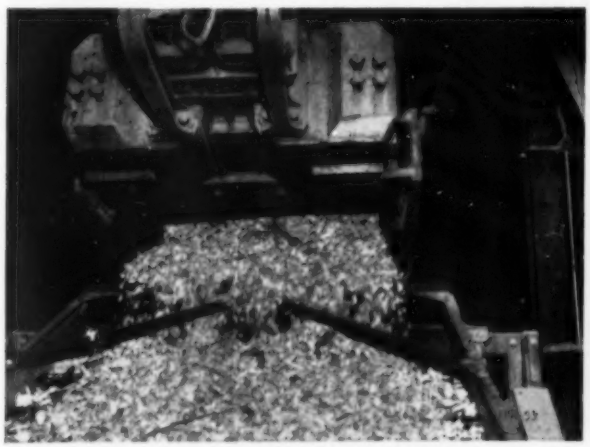

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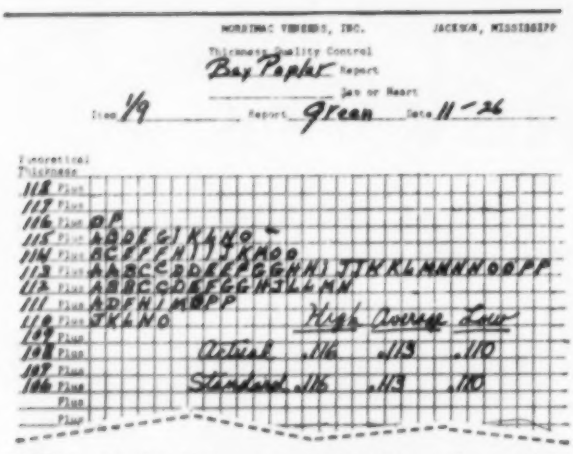

FIGURE 1—Lot plot chart on an actual eight-hour cutting of 1/9th bay poplar.

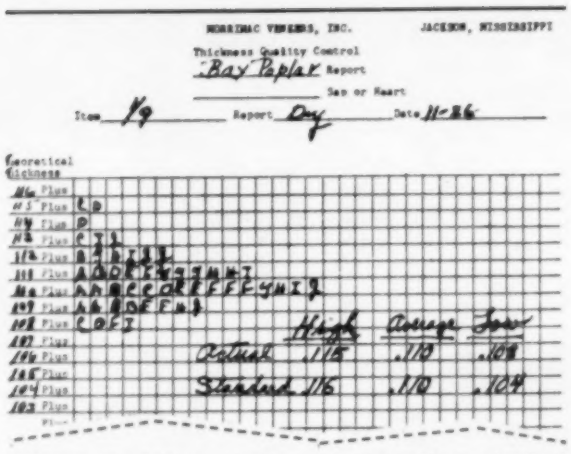

FIGURE 2—Dry thickness readings are recorded on this lot plot chart.

highs and lows shows when the lathe started acting up.

For example, on figure 1—it is observed that the 0 readings taken at 4 p.m. and the P readings taken at 4:30 p.m. indicate that the lathe began to get out of adjustment late in the day, although the late cutting was still within the limits established.

Please note in figure 1—that the "average green thickness" is well established as .1130 which checks perfectly with the "mathematical" or "theoretical" 1/9th thickness of .1125. This conforms to our basic theory that the green veneer must come off the knife at the "green gear thickness" if the veneer produced is to be uniformly thick and smooth.

If the green veneers are cut within .001 in. of the green veneer limits set up in this paper, then the dry veneers produced will be well within the following standard dry veneer thickness specifications:

Thickness	High	Average	Low	Tolerance ±
1/24	.045	.042	.039	.003
1/20	.054	.050	.046	.004
1/16	.069	.065	.061	.004
1/14	.077	.073	.069	.004
1/12	.086	.081	.076	.005
1/9	.116	.110	.104	.006
1/8	.135	.129	.123	.006
3/16	.192	.184	.176	.008
7/32	.225	.216	.207	.009

Now the fourth step is the employment of the quality control engineers' lot plot chart which records four dry thickness readings taken every half hour throughout the drying day, same as was recommended on the green veneer lot plot chart. We present an actual example of the dry veneer lot plot chart on the same run of 1/9th bay poplar previously described (See figure 2).

The dry veneer lot plot chart is the "proof of the pudding." Figure 2 shows that this particular 1/9th cutting is well within the standard dry veneer thickness limits. A comparison between the Green and the Dry Thickness will show a shrinkage in the "average thickness" from .113 to .110. The low thickness shrinkage is from .110 to .108.

Our study of these factors proves to our satisfaction that wood cells do not collapse in the drying operation if the veneer is cut green according to our basic theory. We however agree that wood cells will collapse if the veneer is not properly cut, i.e., too tight, too loose, tight face and loose back, fractured grain, etc.

For the fifth and final step the daily lot plot charts, "green" and "dry" are recorded on a weekly or monthly chart or shown in figure 3. This is from an actual chart record on the same 1/9th bay poplar cutting as shown in figure 1, (green) and figure 2, (dry). This is the permanent record charting the quality of the veneer cut each day in each and every thickness.

Veneer Quality Control

Accompanying article by Francis H. Isaacson, Jamestown Veneer & Plywood Corp., Jamestown, N. Y., describes the "lot plot chart" system for keeping constant quality control checks on the performance of rotary veneer lathes.

The system shows how management can use the charts for both green and dry veneer. The charts are designed to help insure cutting veneer that is uniformly thick and smooth.

A technical paper on this subject was published recently by Ward C. Hutchings, manager, White Manufacturing Co., and Aubrey E. Wylie, professor of forest products, Michigan State University, under the title "Acceptance Sampling of Veneer Using the Lot Plot Plan."

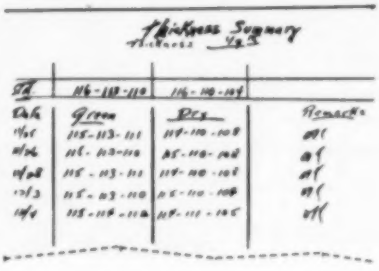

FIGURE 3—Weekly or monthly chart records information from both "green" and "dry" lot plot charts.

One-ninth veneer has been used throughout this paper as an example because it is much more difficult to control thickness on heavier 1/9th veneers than it is on the thinner veneers such as 1/24th.

Similar lot plot charts may be used to control moisture content. One set records the "hot moisture content" as the veneer leaves the dryer. The second set records the "cold moisture content" after the veneers have cooled and equalized. The day-to-day record enables one to change drying set-ups to conform to the changing moisture conditions season to season.

All of this is not as complicated as our story may indicate. The system recommended here calls only for:

(1) Daily green veneer thickness lot plot chart for each thickness cut, and

(2) Daily dry veneer thickness lot plot chart for each thickness cut

What is done with this basic vital information is up to the foreman, the quality control engineer, and the executive responsible for cutting veneer that is to be uniformly thick and smooth.

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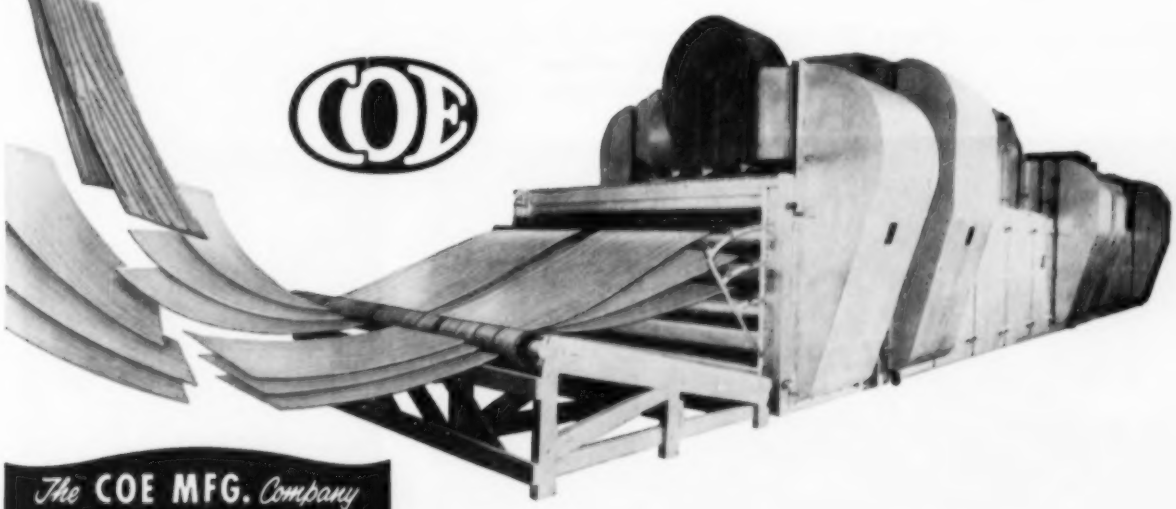
How deep is the ocean? . . . How high is the sky? We don't know, but if all of the veneer delivered from Coe dryers for one day were put in piles it would take on the proportions of a small mountain and if suddenly lifted skyward by a monsterous wind would darken the heavens—at least for a little while.

Fantasy, of course, but none the less illustrative of the wide acceptance that has developed for Coe Dryers. We are certain that this faith has not been misplaced and, while cognizant of the responsibility thus acquired to faithfully serve our many good customers, we are also dedicated to the development of new veneer drying methods whenever and however possible.



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HEIRLOOM FINISH POPULARITY is so great 80% of Kittinger Co. production features it. Secretary desk is an approved reproduction of a rare mahogany desk in the Governor's Palace in colonial Williamsburg, Va.

Old Hand Crafts, Modern Methods Create Popular Heirloom Finish

Here's 25-step process used at Kittinger Co. in creating best-selling antique finish on colonial style furniture

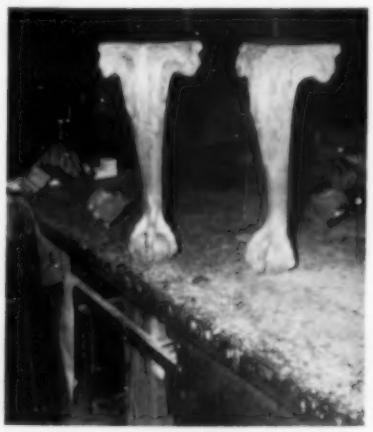
CREATION OF ANTIQUE finish actually starts in carving department. About 15 minutes of hand carving is needed to finish wood rosette decorations exhibited by Production Manager Jack Batson. Note single spindle unit, background, used for roughing out work.

ABOUT 25 STEPS combining old world hand craftsmanship and modern techniques go into the creation of the highly popular "heirloom finish" on colonial-style furniture at Kittinger Co., Inc., Buffalo, N. Y.

The heirloom finish, so popular it is applied to 80% of the chairs, tables and case goods produced by the firm, makes the furniture look like authentic, time-worn antiques complete with proper tones, small dents, subdued stains, worn edges and even pen marks.

Kittinger Co., Inc. is the only manufacturer in the nation licensed to produce copies of the restoration furniture included in the famous Williamsburg, Va. Colonial village. In making replicas for the village, Kittinger craftsmen copied original antiques to precise detail which involved dovetailing drawers by hand, hand making of wooden screws to join post sections of tier tables, hand fashioning tilt table tops from solid mahogany, hand filing hardware from solid brass, and use of

MULTIPLE SPINDLE carving machine is used to rough out carving on legs.



HAND CARVER puts final sharp detail work on legs. At right is leg as it comes from machine, left is leg finished in sharp detail by hand carver.

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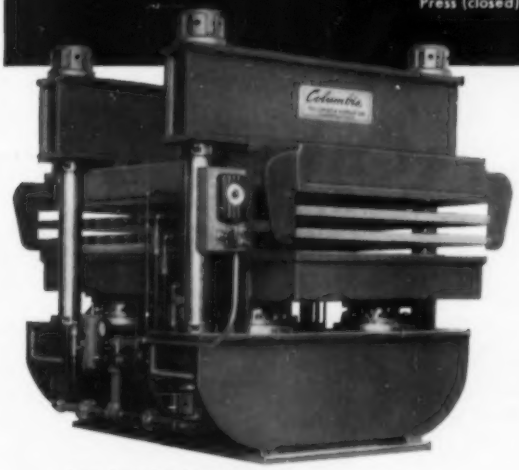

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ANTIQUING process involves taking wood off assembled pieces carefully to simulate wear from long usage. Pete Guz, finishing foreman, shows how small spokeshave is used to round corners of small table.

EIGHT SPRAY BOOTHS are used in application of 25 standard heirloom finishes and a variety of custom finishes.

PART OF "DISTRESSING" process involves careful denting of surfaces with an uneven rock to simulate dents of long usage.

AFTER APPLICATION of heirloom stain, steel wool is used to help highlight finish.

LINSEED OIL put on with cloth helps bring out depth of color in wood on some pieces.

DARK BROWN DYE helps simulate uneven tones of age.

precisely matched wood species for both exposed and hidden pieces.

"The heirloom finish and the furniture we are producing for nationwide sale was natural outgrowth of our Williamsburg assignment," says Jack E. D. Batson, production manager.

"Naturally, in the furniture we are producing for sale we do not use all of the Colonial tools during fabrication as we did for the Williamsburg restoration pieces. We have developed short cuts that utilize modern techniques fully. The heirloom finish and the pieces themselves, however, are still about as close to the 'genuine antique' as possible, and they are enjoying increasingly good public acceptance," he says.

The firm employs 200 with an average of 40 to 50 involved in various stages of finishing. Batson points out that the employees made a detailed, exhaustive study of original antiques to learn exactly where wear marks would occur, what type of dents, stains and other "authentic defects" could be expected in furniture as a result of time and usage. Naturally, many employees with Kittinger have quarter and half-century service in their crafts, and several have been "imported" from European nations that still practice many handcrafts.

First steps in application of the heirloom finish actually occur down in the carving department. For example, while modern multiple spindle carving machines are used to turn out the rough work on legs, hand carvers put the finish details on each leg. A single spindle unit is used in rough carving the distinctive 1 in. diameter rosette decorations, but a craftsman puts in 15 minutes of hand carving to finish each one.

Each piece of furniture is assembled by a single craftsman who also fabricates the larger "wear marks"—such as carefully rounding corners to stimulate age-wear. The process, called "antiquing," is done with hand tools. Each craftsman signs his work with

FINAL OPERATIONS include spraying on two coats of hot lacquer, then waxing, polishing and rigid inspection.

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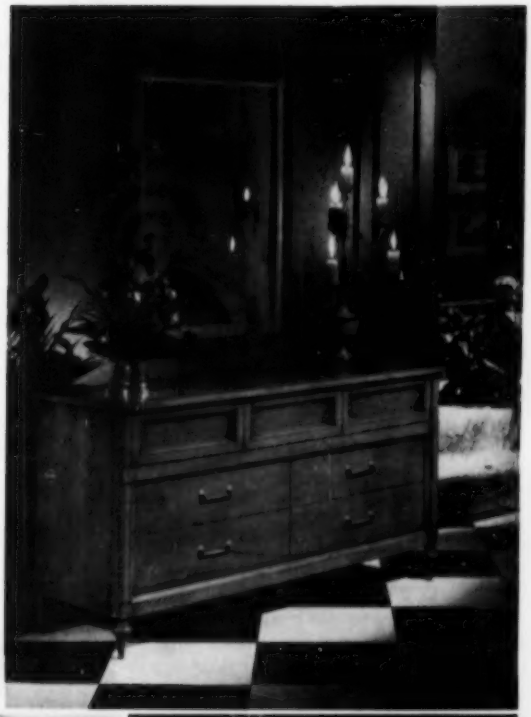

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his own brand or mark when it is finished. This practice helps maintain high quality through pride in workmanship. "Nobody wants HIS name on a poor piece of furniture," Batson observes.

Once a piece is assembled and antiqued it must be bleached out to remove all the natural color of the wood (most exposed surfaces are mahogany). After bleaching, a neutralizer is applied to prevent caustic reactions during later steps.

Next is the first step in the "distressing" process. This step involves judicious denting and marring of certain surface areas with an irregular 6 in. diameter rock which is simply rolled over the wood by hand to stimulate normal usage dents.

Eight modern spray booths are used in application of the lacquers, sealers, and toners. The finishing room defies conveyorization because furniture is finished in 25 standard heirloom finishes and the company matches any customer's finish specifications.

The average piece is sprayed twice with a special non-grain-raising stain to create a light, faded red color. Usually, the first coat is sanded and the second coat is wiped and rubbed with rags. Steel wool also is used to bring out highlights.

Linseed oil is applied with a cloth to bring out the depth of color in the wood. A wood paste filler is applied, and the furniture is allowed to dry overnight. Next a dark brown dye is applied by brush. The dye helps give the wood the appearance of substantial age.

A coat of lacquer sealer is then sprayed on, allowed to dry, and well sanded down. Then a toner is sprayed on. Next, color dyes (mostly brown, but also red, yellow, blue and green) are applied by brush. The color dyes, which bite into the sealer, are used to accentuate grains, and to give depth and color to the finish.

A hot lacquer (27% solid film) is sprayed on next. When dry, the piece is checked for color against a master sample and touched up where necessary. Another coat of hot lacquer is applied, then the furniture is rubbed with portable power buffers and by hand.

Hardware and trim go on next. If the hardware installation man accidentally mars the finish, he attaches a small piece of white mastic tape to the spot so it can be easily spotted by the inspectors and retouchers. Finally, each piece is waxed, polished, and subjected to an exacting final inspection for color quality and perfection of finish.

Officers of Kittinger Co., Inc., are: Spencer Kittinger, president; Irvine K. Kittinger, treasurer; Fred J. Batson, vice-president; and Chester M. Geyer, secretary.

Some Equipment and Materials Used at Kittinger Co., Inc.:

Lacquers, stains ..... Pierce & Stevens, Inc.; James B. Day Co.; Grand Rapids Wood Finishes Co.
Spray booths and fans ..... Paasche Airbrush Co.
Spray guns ..... DeVilbiss Co.
Powered rubbing machines ..... Sundstrand Machine Tool Co.

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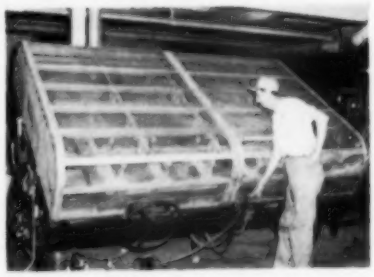
"Previously," says Paul W. Hake, vice-president and general manager, "we applied glue to frame members, nailed them, and then inserted them into air clamps for several hours to allow the adhesive to set. Now, the glue is applied to frame members, the members are placed in adjustable, automatic clamps in the electronic unit, and the glue is cured in 1 to 1½ minutes."

The electronic unit is operated by a two or three-man crew depending on the style and size of the frames being assembled. One or two men apply the adhesive (urea resin type) to frame members, and one man inserts the loose members into the machine and removes the glued frames.

The machine sets the glue electronically while the frames are under pressure. Depending on size, several frames are glued at one time.



DURING BONDING, which takes 1 to 1½ minutes, transparent "lid" on machine is closed.

"The machine is faster from all standpoints," says Hake, "and we believe it does a better job of bonding frames than our former system."

The company is currently using the machine for assembly of frames for china cabinet doors, mirror frames, and frames for various types of bedroom and dining room cabinets.

Some Equipment and Material Used at Hy-Lan Furniture Co., Inc.:

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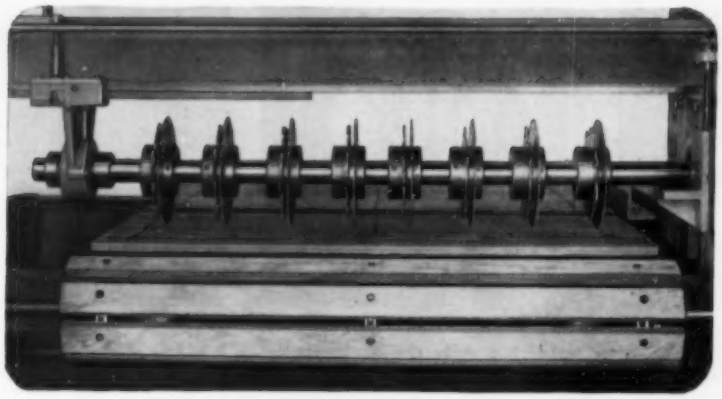
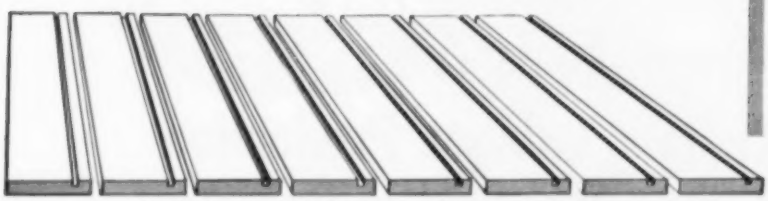


Arbor set-up for multiple drawer front work.



8 identical drawer fronts ripped and grooved in one pass.

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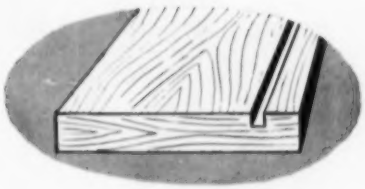

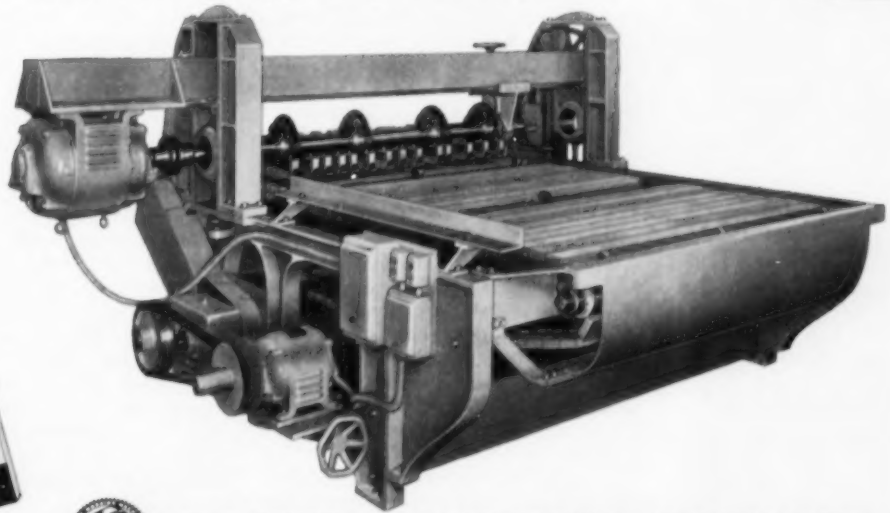

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PORTABLE STROKE SANDER is used on cabinet end before it goes to finishing

ELECTRIC DRILL is used to install cabinet hardware

FOR SEMI-CONCEALED HINGE on cabinet door, workman first places template on door, then routs out back veneer for hinge

Power Tools Aid Custom Cabinet Production

PORTABLE POWER TOOLS are a big item in the production picture at Wood-Hu Kitchens, Inc., Brockton, Mass., because, in the words of Bob Galente, president and assistant treasurer, "They are our means of doing quality work."

Some of the many jobs they perform in the plant are illustrated in the pictures presented herewith.

The cabinets are built according to blueprints furnished by dealers throughout New England. Each dealer, who must have a model kitchen display in his showroom in order to qualify for dealer discounts, has brochures detailing styles, sizes and prices as well as plan sheets. All are furnished by Wood-Hu.

To help the dealer sell, Wood-Hu also has four field representatives located in territories as well as two field representatives who work out of the Brockton plant.

Each representative is paid a percentage on the business which originates in his territory. The exact percentage varies according to the size and character of the individual territories. All cabinets are shipped to the point of installation in one of Wood-Hu's four semi-trailers.

The company also makes cabinets to order for Montgomery Ward & Co.

The cabinets are made up on order in multiples of 3 in. "But even so, there's usually one cabinet in each order that has to be made exactly to fit," says Galente. "That's where working with wood is an advantage—with wood we can build anything."

Wood-Hu cabinets are furnished in the following natural finishes: red birch, white birch, knotty pine, mahogany, korina, oak and walnut. Although no cabinets are finished in enamel, cabinets are toned either driftwood or butternut.

Some Machinery, Equipment and Materials Used by Wood-Hu Kitchens, Inc.:

Routers ..... Stanley Tool Works
¼ in. Drills ..... Black & Decker Mfg. Co., Speedway Mfg. Co.
Hand Polishers ..... Millers Falls Co.
Automatic Electric Jig Saw .. Victor J. Krieg, Inc.
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Photograph compliment of Dept. of Forests, Australia.

Australia, although of considerable size, sufficient to be considered a continent, has only 153,000 square miles of forests. From these comes the Australian Walnut, Queensland Walnut, or Orientalwood tree. It is known by these three names.

Its coloration is gray and brown with shades of pale red, distinctive from other types of Walnut. Available only in very limited quantities.

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Finest veneers, bandsawed and kiln dried lumber.

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PRODUCTION IDEAS

Manpower • Methods • Machines

Water-Wash Spray Booth

TO BETTER UNDERSTAND the workings of the water-wash spray booth, an installation was visited which had a water-wash booth in operation, designed with a water curtain to catch most of the overspray, water eliminator plates to prevent excessive loss of water through the exhaust fan, and spray chamber to stop the major part of overspray.

In the operation of this water-wash spray booth the air is drawn into the booth over and under the water curtain at the same time to trap the overspray in the spraying area and to prewash the air before it enters the washing section of the booth. The washing action is created by suction from the exhaust fan. Air that passes under the water curtain is washed as it goes through the water falling from the curtain into the tank.

Two streams of water and air join at this point to be carried into the scrubbing torrent. As the spray-charged air passes through the booth, its direction is reversed twice as it drives against metal baffles. This creates a scrubbing action and drop collisions which operate to trap material particles in water. The material-laden water settles in the tank below in the form of sludge. The air, clean of material, then passes through a moisture separator to enter the exhaust fan free of water.

AS CABINET PARTS are sprayed at water-wash booth compounded water in tank floats overspray.

Proper treatment of the water with a commercial compound is required and the water changed and the tank cleaned an average of once every two weeks. Tests were conducted under actual spraying conditions until the proper concentration of compound was obtained, using commercial testing equipment and simple, quick hand tests. The chief function of compounding is to remove stickiness from the material and to float the overspray.

Excessive Motor Vibration

WHEN A MOTOR VIBRATES excessively, this indicates improper foundation, insecure mounting, rotor-pulley-coupling or load out of balance, defective bearings, poor electrical connections, or failure to fasten the driven load securely.

Lighting for Plywood Grading

PROPER LIGHTING to permit correct plywood grading and inspection has always been a problem, and eye strain is a common complaint of inspectors. Many plywood plants are now using a system of reflective light-

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The 640-Ton Hot Plate Press illustrated has been producing plywood panels 102" x 50" since 1943 . . . a typical example of continuous production obtainable with a WILLIAMS-WHITE Hot Plate Press. Available in capacities from 50 through 5,000 tons for the production of plywood, hardboard and allied materials, each is engineered to your specifications. Take advantage of our "know how." For details write us direct or to any WILLIAMS-WHITE Representative. Ask for Bulletin 200-A.

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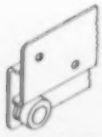
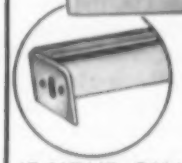
DRAWER SLIDES

END OF DRAWER TRACK


FRONT OF CABINET TRACK



GLIDERITE DRAWER SLIDE No. 626 has brackets for mounting to back of cabinet. This is a variation of Model No. 622 which has the standard type, straight tracks.

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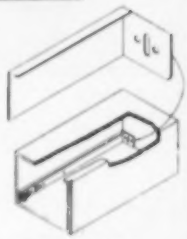

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ing which employs mirrors to reflect light onto the panel surface. It is said to provide a bright uniform light to flood the entire surface of the panel without shadow. Since it is well below the eye level of the inspector, this system is said to permit him to see all defects at a glance without having to lift the panel and sight across the surface.

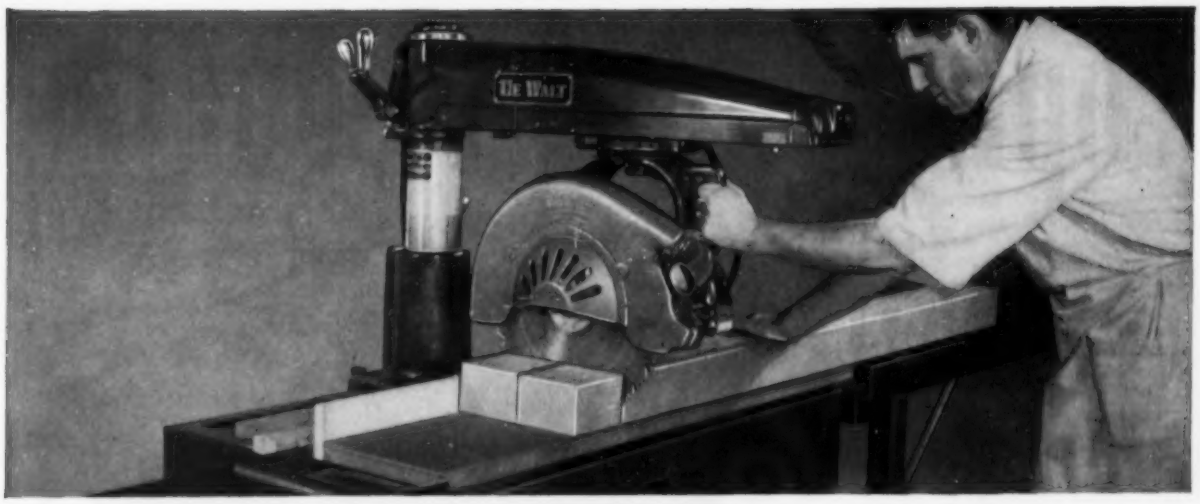
In a typical application the mirrors used measure 96 x 6 in. They are mounted on sturdy stands parallel to the inspection station, and are tilted at an angle which will properly reflect light from a series of sealed-beam lights suspended from the ceiling. These lights are completely enclosed except for a 3 in. slot in the bottom which directs the light onto the mirror below.

Portable Chipper

A LARGE CONTRACT logging concern operates a portable chipper in scattered stands and logged areas to chip all material under 10 in. and down to 4 in. in diameter to produce pulp chips. Chips produced range from ⅝ to ¾ in. long. Equipment used includes the wood chipper, a chip conveyor and a log conveyor. The chipper has capacity to produce from 8 to 10 units per hour (200 cu. ft. per unit of chips). The log chain conveyor and chipper are driven by a diesel engine and the chip conveyor operates from a power takeoff.

Logs are fed manually to the four-row, lug-equipped log chain conveyor to be fed to the chipper. Chips from the chipper are discharged to a bucket-type conveyor to load them into open-van trailers which hold about eight units. Four to six trucks are used per day as the average haul is from 100 to 120 miles.

CORRECTION: Above photo illustrates steam spray gun covered in item, "Enamel Spraying with Dry Steam," page 38, July Wood & Wood Products. Our apologies for publishing wrong illustration.—The Editors.



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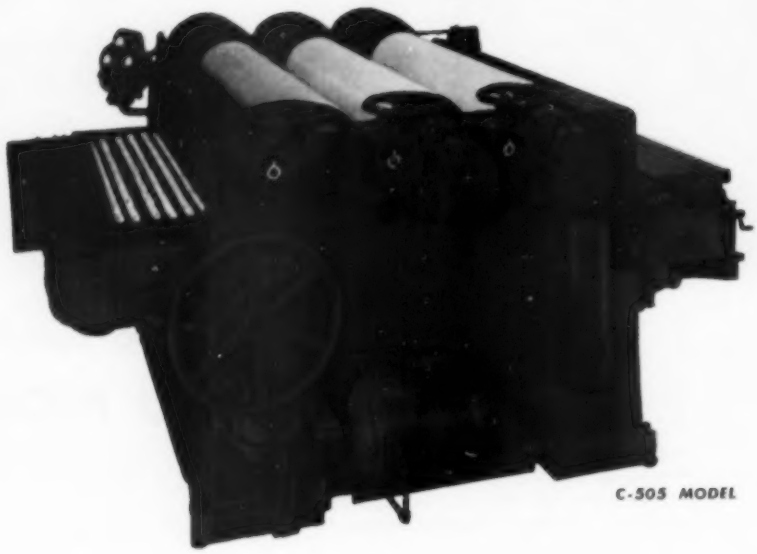

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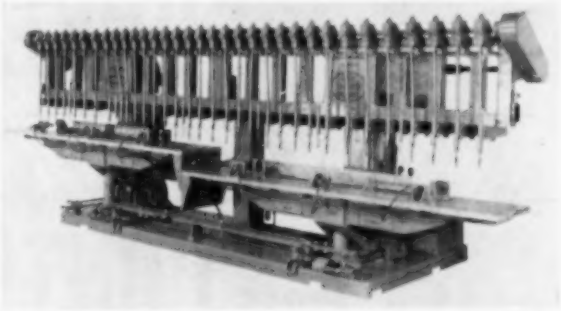


MFR.: B. M. Root Co., Dept. WP, York, Pa.

DESCRIPTION: "C C H" multiple borer with split table which changes machine into two independent 10 ft. capacity borers.

FEATURES: 20 ft. table can act as single unit for boring long stock. Special clutch and valve mechanisms divide table into two units for boring short stock. Machine has 33 spindles driven by two 15 h.p., 1800 r.p.m. ball bearing motors. Spindles universally adjustable for in-line or out-of-line boring over maximum area of 21 ft. 4½ in. in length by 12 in. cross-line. Has hydraulic feed and micromatic adjustment of table stroke for accurate depth boring.

Sandwich-Type Laminate

MFR.: U. S. Plywood Corp., Dept. WP, 55 W. 44th St., New York 36, N. Y.

DESCRIPTION: "Novoply" sandwich-type laminate of resin-treated wood particles in 3/8 to 2 in. thicknesses.

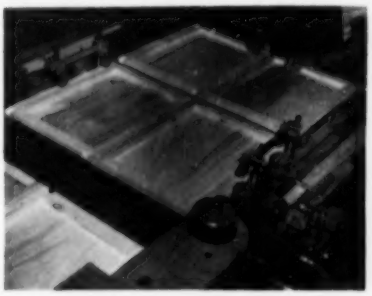
FEATURES: Made of three-ply board with core of graded medium sized chips and facings of wood flakes, fused under heat and pressure. Especially recommended for furniture core stock and wood partitions because of thickness. Under atmospheric conditions expands or contracts less than .17% in length and width. Has minimum "show-through" on veneer surface of furniture. Does not "telegraph" pattern to veneer surface even where no crossbands used. Bonds smoothly with plastics. Modulus of rupture in bending for some thicknesses is as much as 3000 p.s.i. Available in cut-to-size panels from 6 x 12 ft. to 4 x 16 ft.

Veneer Edger and Trimmer

MFR.: Production Development Co., Inc., Dept. WP, 2404 Hillsboro St., Raleigh, N. C.

DESCRIPTION: IMA continuous feed veneer edge banding and trimming machine.

FEATURES: Automatically feeds edge veneer strips from either or both sides out of hoppers, each of which holds 70 strips 1/28 in. thick. Panels loaded at infeed end by hand, carried past glue spreaders by feed rolls, and through machine by two heated traveling steel bands which apply edge pressure and heat for banding. As panels leave machine, oversize veneer is automatically trimmed by four fine-tooth veneer saws which automatically compensate for thickness variations. Adjustable for panels from 6 to 72 in. wide, 3/8 to 1 1/2 in. thick, and from 12 in. minimum to unlimited length. Ad-



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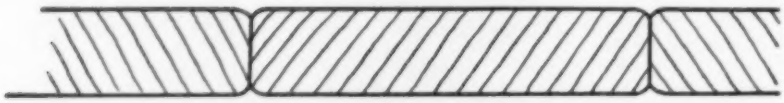

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GRANITE BOARD saves up to 10¢ a square foot when used as a core stock for wood veneering. Thicknesses range from 3/8" to 1-3/16". Standard size: 48½" x 96½". Special sizes to 16' long. Available in densities of 41 pcf and 30 pcf. Send coupon today for full information.

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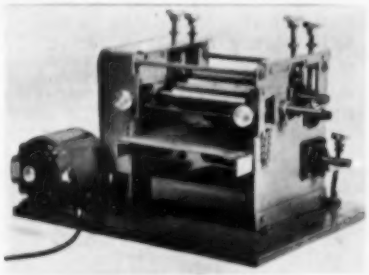
justable for veneer from 1/42 to 1/8 in. thick. Feed speed adjustable up to 120 f.p.m. Heat adjustable from room temperature to 550° F.

6 ft. Bandmill Headrig

MFR.: Enterprise Co., Dept. WP, Columbiana, Ohio.
DESCRIPTION: 6 ft. bandmill headrig redesigned for increased rigidity, speed, ease of adjustment and less downtime in bandsawing operations.
FEATURES: Strain peaks on blade counteracted so blade life increased. Sensitivity of strain mechanism eliminates moving of columns. Revolving parts turn on anti-friction bearings. Wheel raise totally enclosed, eliminating thread clogging. Machine has stationary top wheel shaft which, company claims, adds strength eliminating possibility of fatigue failure in shaft. Machine operates as right or left hand mill without new parts or machining of components.

Laboratory Roller Coater

MFR.: L. R. Wallace & Co., Dept. WP, 172 N. Vernon Ave., Pasadena 3, Calif.
DESCRIPTION: Model 57-L-1 "Walco", heavy-duty, laboratory roller coater for applying adhesives, paints, and other coating materials to plywood, hardboard, paper and related products.
FEATURES: Coats up to 3800 linear ft. per hour or 15,000 sq. ft. 48 in. wide per hour. Covers up to 850 sq. ft. per gal. of material. Coats flat surface with predetermined uniform thickness. Pick-up roll picks up coating medium from re-



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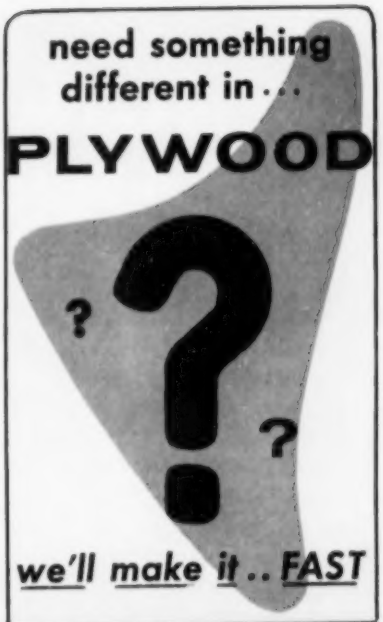

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servoir, transfers to transfer roll and then to coating roll, assuring accurate coating control. Pick-up and transfer rolls are 2½ in.; spreader and pressure rolls, 4 in. All made in lengths from 6 to 48 in. Adjustable bottom roll permits handling of variety of material thicknesses up to 1½ in. thick. Rolls available in steel or rubber, depending on coating material used.

Cutoff Saw

MFR.: C. O. Porter Machinery Co., Dept. WP, 666 Front Ave., N. W., Grand Rapids, Mich.

DESCRIPTION: Model 45 "Hydracut" heavy-duty cutoff saw designed for operating efficiency and flexibility.

FEATURES: Available in maximum stroke sizes of 24 and 36 in. with variable ad-

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of high-speed steel and carbide-tipped for plywood. New-style bull-nosed pattern. Small radius hides glue lines.

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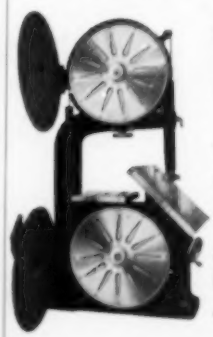

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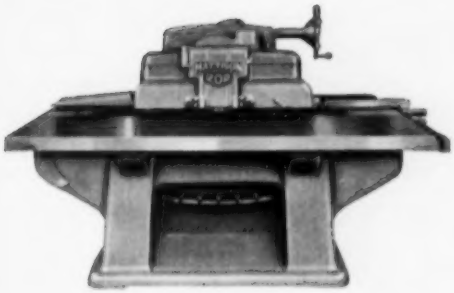
Morgan Manufacturing Co., Black Mountain, N. C., has discovered many advantages in using Mattison Model 202 Straight-Line Rip Saws. It is possible to save $12,000 annually in ripping operations on hardwood stock. Also, these machines do straight-line ripping after which the stock is glued without going through a glue-jointer.

Morgan is one of the largest finished dimension producers in the country, operating a million dollar plant in which every phase of production makes use of the most efficient, modern equipment available.

Close analysis of production efficiency will lead to the selection of Mattison Rippers every time. The Model 202 is a precision machine capable of serving as a jointer as well as a ripper. Two jobs can be done with one machine, saving equipment and labor costs.

Ask your Mattison representative to explain the advantages of overcut construction. And remember—every Mattison woodworking machine is built to the same standard—*for finest quality work at lowest possible cost.*



8 ways to save

- Glue exposed joints directly without going through the glue-jointer. Save ⅛ in. stock on each edge.
- Single chain with one-piece jam-proof blocks under the saw allows cutting sliver edgings.
- Elimination of glue-jointer frees two men for other work. Cost per finished piece drops.
- Ample power and rigid construction mean maximum production.
- Absolute alignment of working parts is assured by hardened, wear-resisting tracks mounted on the base.
- Patented saw jointing device makes every tooth do its share of the work for smooth cuts and less frequent sharpening.
- Every practical safety device is used on the machine.
- Many Mattison machines pay for themselves in the first year or less.

MATTISON
WOODWORKING MACHINERY

Mattison Woodworking Division
545 Blackhawk Park Avenue
Rockford, Illinois

Gentlemen: Please send bulletin on the Model 202 Rip Saw.

Name_____

Company_____

Address_____

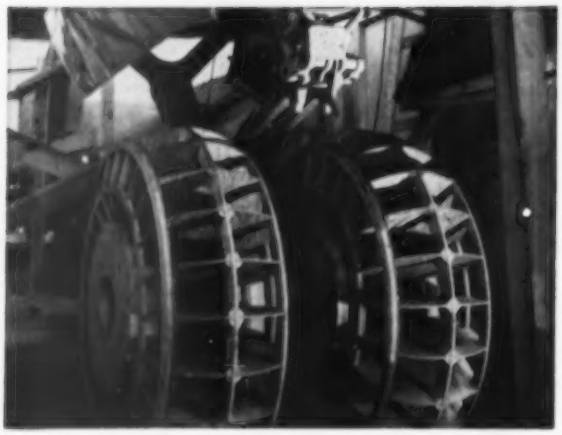
City_____ State_____

LIGHT

This prototype LCVP, built with an all-plywood planking system, dramatically demonstrates how fir plywood saves weight without strength loss. From 1,000 to 1,500 pounds lighter than the normal 18,000 pounds, the prototype developed by naval architect George W. Moore of Kettenburg Boat Works, San Diego, for the U. S. Navy Bureau of Ships, has passed accelerated beaching tests approximating four years service.

DURABLE

Resin-fiber overlaid fir plywood, used in construction of these electroplating cells, saved more than $30,000 in four years. The fir plywood acid tanks were built for $140 each, a saving of from $400 to $600 under rubber-lined steel tanks. Previous lumber tanks gave trouble with leakage, required heavy framing. Both objections were overcome by the overlaid-plywood units.



WORKABLE

Working mock-up of C-124 Globemaster transport built by Douglas Aircraft Co., Santa Monica, proves the versatility and workability of fir plywood. Shown are simulated tires of plywood, used to check brakes. Actual tires would have been too heavy for tests; fir plywood was used because of its strength, lightness, and working ease. Large size, smooth finish, and suitability for contour work were other reasons for using plywood in mockups.

DFPA TESTED QUALITY

FIR PLYWOOD

means quality construction

FOR MORE INFORMATION about uses shown above, design and/or specification data, mail coupon ——→

Tell our advertisers you saw it in **WOOD and WOOD PRODUCTS**

1. SPECIFY BY DFPA QUALITY TRADEMARKS

DFPA grade-trademarks appear only on plywood manufactured, inspected and scientifically tested under the DFPA quality control program. DFPA, Douglas Fir Plywood Association, is a non-profit industry organization devoted to product research, promotion and quality maintenance.

2. CHOOSE THE RIGHT GRADE FOR EACH JOB

Fir plywood comes in two types: 1. *Exterior* (waterproof glue for permanent exposure to water or weather); 2. *Interior* (moisture-resistant glue) for indoor uses, crating, sheathing, maintenance. Within each type are several grades – i.e., panels with one good side, two good sides. Most popular grades are shown below.

EXT-DFPA — Exterior plywood for permanent outdoor uses

PlyPanel® for paneling, most indoor uses

PlyScord® is unsanded panel for sheathing, crating, bins, etc.

PlyForm® concrete form grades come in Exterior and Interior types.

SPECIALTY PANELS include 1. *Overlaid Exterior plywood* (hard, smooth, abrasion-resistant fused resin-fiber surfaces) for siding, signs, tanks, concrete forms; 2. *Textured panels* with smart grooved, brushed or striated surfaces for fixtures, siding, special decorative effects.

DOUGLAS FIR PLYWOOD ASSOCIATION
Tacoma 2, Wash. (Good USA Only) Dept. 172

☐ Please send basic fir plywood specification data.

☐ Also send information about use of fir plywood for.....

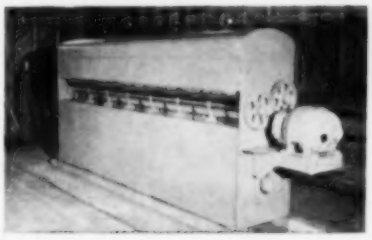
Name.....

Firm.....

Address.....

City..... Zone..... State.....

justments. Hydraulically-operated carriage adjustable for both cutting and return stroke speeds. Speeds individually regulated up to 55 f.p.m. Operator positions stock and presses foot pedal. Blade automatically carried through cut and back to starting position. Both sizes available in single speed up to 15 h.p. or four speed 7 1/2 h.p.

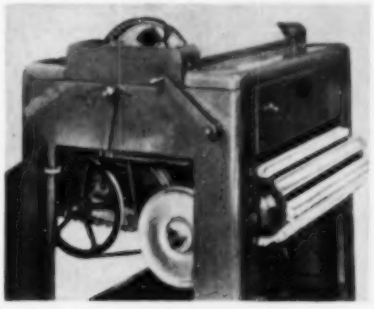


Veneer Tenderizer

MFR.: Cardwell Machine Co., Dept. WP, P. O. Box 1359, Richmond 11, Va.

DESCRIPTION: "Redmayne" veneer tenderizer for reducing warpage in veneer sheets.

FEATURES: Makes series of intermittent cuts parallel to edges of veneer sheet as sheet moves through rollers. In this way, company claims angular stresses causing warpage are eliminated and buckled veneers made pliable. Makes possible production of quality, flat plywood panels from low quality, crooked grain logs.



24 in. Endless Bed Sander

MFR.: Woodworkers' Tool Works, Inc., Dept. WP, 222 S. Jefferson St., Chicago 6, Ill.

DESCRIPTION: 24 in. endless bed sander fitted with rubber inserts on feed works.

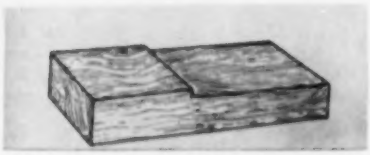
FEATURES: Non-oscillating metal 24 in. drum sands hard or soft wood smoothly without cross streaks. Has variable rate of feed from 15 to 30 f.p.m. and can be stopped and started while machine is in operation. Endless bed fitted with cup rubber inserts. Can be fed stock up to 6 in. thick and, fitted with extra pressure bar, will take pieces as short as 8 in.

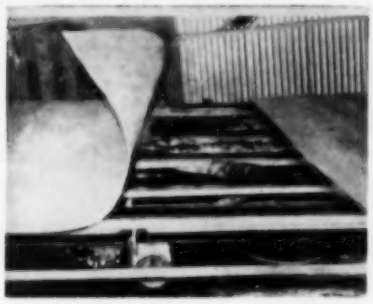
Wood Densifier

MFR.: Lundstrom Laboratories, Dept. WP, Herkimer, N. Y.

DESCRIPTION: "Densiwood", patented process that increases density of wood making it 80% harder than wood in normal state.

FEATURES: Available in strips for gluing to larger components. May be glued or attached with screws. Strips may be finger jointed into any length of moulding while at same time maintaining continuous grain structure. Maximum length per piece is 35 in., but 29 in. length most economical. Also available in squares. Most wood species in general use stocked. Can be worked on any woodworking machinery but because of degree of hardness, carbide-tipped tools recommended for production runs.



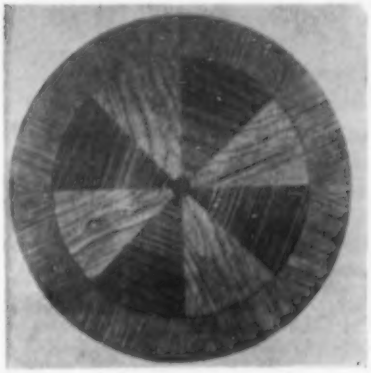


Tipple Control System

MFR.: Republic Electric & Development Co., Dept. WP, 2627 Western Ave., Seattle 3, Wash.

DESCRIPTION: Fully or semi-automatic tipple control system for veneer lathe drives.

FEATURES: Has one selector switch and one action button located at operator's fingertips which permit pre-selection of trays, automatic control of tipple tray hoist movements, and automatic breaking of veneer or tipple. Tipple speed automatically synchronized with speed of lathe by follower control. Air jet veneer breaker operates through tray control panel cleanly breaking veneer up to 1/4 in. at speeds over 600 f.p.m. System easily installed on lathe drive equipment.



Simulated Wood Inlays

MFR.: Reiss Associates, Dept. WP, Lowell, Mass.

DESCRIPTION: Simulated wood inlays in various shapes and designs for the furniture industry.

FEATURES: Made of high pressure plastic

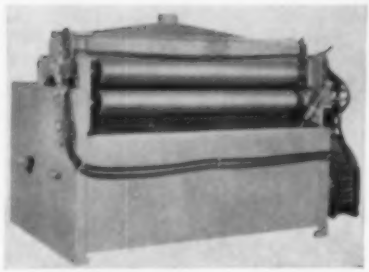
laminate. Patterns available in 1/16 in. standard Railite and in 5/32 in. Railboard. Surface impervious to cigarette burns, boiling water, alcohol and other household hazards. Designs are replicas of inlaid woods.

Sander and Polisher

MFR.: Timesavers, Inc., Dept. WP, Box 7446, Robbinsdale Station, Minneapolis 22, Minn.

DESCRIPTION: Model SPL added to "Speedsander" line of sanders and polishes for wood sanding and metal polishing operations.

FEATURES: Has 34 in. feeding height, which allows model to fit into production setup or finishing line to work in tandem with other models. Automatic belt tracking through use of swivel tracking rolls. Feed speeds up to 100 f.p.m., higher speeds if required. Company claims unit has one pass efficiency, and finished materials free from chatter and oscillation marks. Available in 24, 40, 50 and 60 in. widths.



Air-operated Paint Pump

MFR.: Spee-Flo Co., Dept. WP, 720 Polk, Houston, Tex.

DESCRIPTION: Air-operated, reciprocating paint pump which operates from standard bung-type drum.

FEATURES: Permits handling of finish materials from original bung-type drums. Sealed air motor completely separated from pump. Has 2-1 ration assuring continuous flow. Designed to serve up to six guns. May be mounted at spray booth for direct supply to guns, or at central supply room dispensing material to booth few hundred feet away. Available in 10 or 55 gal. models.

AMERICAN WOOD HOG

CONVERTS OAK SCRAP INTO FUEL FOR COOPERAGE PLANT

Hard oak, used in the manufacture of barrels, has kept this cooperage company supplied with plenty of fuel (and the steam so essential to its operations). Pieces of 1 3/16" stock, varying from 4" x 15" to 48" x 1" are fed to the American Hog. The company used no coal whatsoever last year—very little in previous years since the installation.

Investigate American's fuel-saving features for your plant's operation.

WRITE for Literature "Making Wood Waste Pay"

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1523 Macklind Ave. St. Louis, Missouri

Chipper Disc Plates

MFR.: Ohio Knife Co., Dept. MM-50-WP, Cincinnati 23, Ohio.

DESCRIPTION: "OK" hardened wear plates for chipper discs.

FEATURES: Have 3/16 in. depth hardened surface of ball bearing tool steel, on mild steel backing. Designed to withstand heavy shock, have longer life and deliver more uniform chips during chipping operations. Regrinding necessary only after use of six months or more, according to company.

COLD SETTING

LYTRON, LAUXEIN, RESINOX, LAUXITE: REG. U. S. PAT. OFF. °PATENT NO. 2,402,492

PROTEIN-LATEX adhesives, combinations of Lauxein caseins and Lytron latex, set at temperatures right down to freezing. With Monsanto PROTEIN-LATEX adhesives and the NO-CLAMP° process, table tops, doors and the most difficult to glue surfaces can be efficiently mass produced using shorter pressure periods and less time, space and equipment. Curing rates are easily adjusted with changes in formulation or spread rate.

PROTEIN-LATEX adhesives are easy to mix and they have a long working life. They are gap-filling, self-bonding and excellent for rough cut veneers. Bonds made with PROTEIN-LATEX adhesives are unusually durable and water resistant.

For technical data on Monsanto PROTEIN-LATEX formulations, write to Monsanto Chemical Company, Plastics Division, Room 2025, Springfield 2, Mass.

Other outstanding Monsanto Adhesives are:

LAUXITE MF-300 *A melamine adhesive for hot press, colorless waterproof bonds.*

LAUXITE 326 *A melamine-urea adhesive for hot press gluing when greater boil resistance is desired.*

LAUXITE MF-325 *A specially formulated powdered melamine resin binder for granulated wood.*

RESINOX *Phenolic resins, liquids and compounds, for granulated wood molding and hardboard.*

LAUXITE UREA *Resin glues, both liquid and powder, for high water resistant bonds.*

MONSANTO

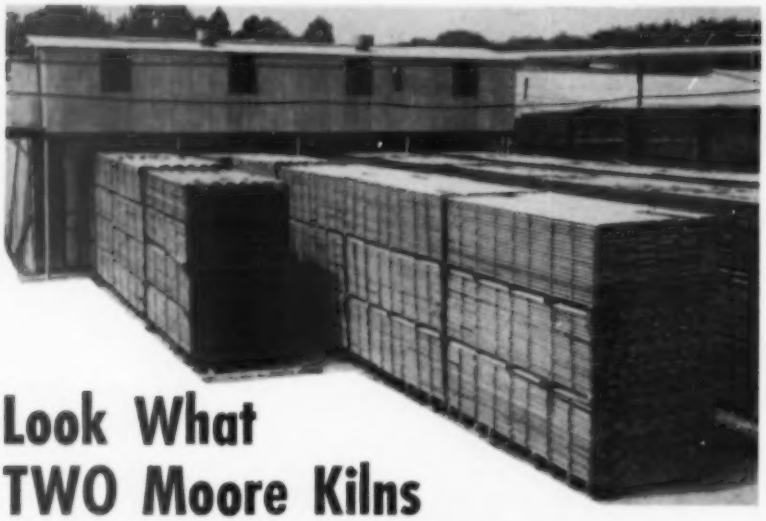
LITERATURE

Catalogs • Bulletins • Brochures

Electronic Gluers. Industron Corp., Dept. WP, 55 Needham St., Newton Highlands, Mass. Fold-out brochure presents line of high frequency electronic gluing equipment. Includes side-feed edge gluer, thru-feed press, high frequency generators for rapid curve bonding, and panel-on-frame presses.

Feed Attachments. Irving S. Pfefer Co., Dept. WP, 6232 Atoll Ave., Van Nuys, Calif. Two bulletins describe mounted feed attachments for use on variety saws, jointers, shapers and bandsaws—Standard Model 287, a heavy-duty machine available in three ratios, and Super Model 487, extra heavy-duty machine with eight speeds from 10 to 120 f.p.m.

Round Strapping Machine. Gerrard Steel Strapping Div., U. S. Steel Corp., Dept. WP, 2915 W. 47th St., Chicago 32, Ill. Booklet illustrates Model 12 automatic round steel strapping machine, available in large opening and standard opening models for dispensing strapping.



Look What TWO Moore Kilns Produced In Just ONE Year

At Williams Lumber Co., Rocky Mount, N. C., Moore Cross-Circulation Kilns have established a reputation for producing quality seasoned lumber. During the past year, these two kilns:

★ SEASONED over 7,750,000 feet of pine and hardwoods

★ EVAPORATED 10,075,000 pounds of water

★ SAVED an estimated $10,400 in freight (equal to 302 carloads) on moisture removed from lumber before shipment

Moore Cross-Circulation Kilns operate automatically after the 5 o'clock whistle. They can be the best-paying investment a plant can make. Write for information.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B. C. CANADA · NORTH PORTLAND OREGON

Carbide-Tipped Saws. R. Hoe & Co., Inc., Saw Div., Dept. WP, 910 E. 138th St., New York 54, N. Y. Booklet entitled, "Carbide Tipped Saws and Tools," tells how carbide cutting edges solve industrial cutting problems. Included are tips on how to obtain optimum results, how to order and how to maintain tools. Tools covered include router bits, groovers, dado sets, split saws, cut-off, bevel edge, slotting, wing and V-cutters.

Packaged Wood Flour. Portco Corp., Dept. WP, Terminal Sales Bldg., Portland 5, Ore. Folder describes long-fibered wood flour offered by company, baled and wrapped in 30 to 40 lb. blocks ready for easy shipping.

Particle Board. Roddis Plywood Corp., Dept. WP, Marshfield, Wis. Brochure describes "Timboard," a wood particle board made by company process. Lists specifications and uses. *(Sorry, in original item published in July 1957* Wood & Wood Products, *wrong registered trade name was used. Ed.)*

Radial Drill Presses. Walker-Turner Division, Rockwell Mfg. Co., Dept. WP, 100 N. Lexington Ave., Pittsburgh 8, Pa. Bulletin describes improved line of radial drill presses which permit moving of spindle head to work, designed for precision drilling of large stock, sheet stock, panels or plywood.

Materials Handling Equipment. Clark Equipment Co., Industrial Truck Division, Dept. WP, Battle Creek, Mich. Sixteen page catalog describes and illustrates complete line of fork lift trucks, straddle carriers, powered hand trucks and towing tractors. Includes specifications and attachment reference chart.

Speed Reducers. American Pulley Co., Dept. WP, 4200 Wissahickon Ave., Philadelphia 29, Pa. Catalog covers line of shaft-mounted "Screw King" speed reducers for screw conveyor application.

Chipboard Processes. Reference booklet, "Chipboard from Wood Waste," contains flow charts, operating photos, and technical details of various installations which process chipboard and particle board. Available from Wood & Wood Products, 139 N. Clark St., Chicago 3, Ill., at $1.00 per copy or at quantity discounts.

Dust Separator. Day Sales Co., Dept. WP, 810 Third Ave., N.E., Minneapolis 18, Minn. Bulletin No. 576 deals with "HV" heavy-duty cyclonic dust separator covering design improvements and applications. Includes air flow resistance and dust recovery curves, temperature and pressure correction formula, selection chart, dimensions, supports and accessories.

Laminated Panel Stock. Weyerhaeuser Timber Co., Dept. WP, Tacoma 1, Wash. Brochure describes "Ply-Veneer," laminated panel stock with Douglas fir veneer core bonded to kraft inner and outer liners for many manufacturing and packaging applications.

AN IDEAL BASE FOR BETTER PRODUCTS

WEYERHAEUSER 4-SQUARE PARTICLE BOARD—
contributes to outward appearance, inner quality

FOR QUALITY in furniture that's more than "skin deep", investigate the use of Weyerhaeuser 4-Square Particle Board as a core.

This panel material has been especially engineered to meet furniture manufacturing requirements. It is strong, stiff, durable, uniform in density and free of grain and knots. It has smooth, sanded surfaces both sides. No crossbanding necessary. There are no grain or knots to mirror through thin decorative surfaces. Because of the unique rearranging and bonding process of wood particles used, there is no tendency to warp, twist or split.

When laminated or veneered, machinability of 4-Square Particle Board is excellent. It can be sawed, drilled, routed, mortised, grooved and glued like lumber or plywood. Panels cut cleanly permitting tight fitting miters; can be joined by edge gluing, doweling, rabbeting or other standard methods.

Uses are many and varied including coffee, dinette and other table tops; counter, sink and kitchen tops; side panels and fronts of furniture; cabinet and sliding doors. Thicknesses, sizes, densities to meet your needs.

Weyerhaeuser Sales Company
DEPARTMENT PE-97
First National Bank Building • St. Paul 1, Minnesota

Write for sample

Check the smooth surface and uniform texture that means better manufacturing results. Write today for free sample and literature.

Paper Cores

Continued from Page 22

1/4 in. hardboard and face and back of plastic.

Hard maple is used for the frames of all panels on which the edge will either receive a "natural" finish or will be subjected to abuse during service. All other frames are of yellow poplar. The frame stock is machined to the specified thickness with tolerances of ±0.005 in.

As each frame is assembled in a jig, clamp nails are applied at the joints and the honeycomb fitted into the opening. This honeycomb has been purchased with a thickness 0.010 in. greater than the nominal for the rail and with a tolerance of ±0.010 in. This means that the honeycomb is never thinner than the frame members while it may be up to 0.020 in. thicker. This arrangement is an attempt to reduce "telegraphing" or "show-through" of the frame after final assembly which occurs when the honeycomb is thinner than the frame.

The 1/4 in. plywood skins are sanded two-sides and have No. 1 faces since even small knot holes and splits in the face veneer will show through the 1/16 in. decorative laminate face. The hardboard skins are either purchased smooth-two-sides ready for gluing or smooth-one-side to be planed or sanded to remove the screen impression and improve the gluing characteristics.

All panels with paper-honeycomb core stock are bonded by the cold-press method. Whether three or five-ply, the adhesive is applied to the skins. The panels are assembled in bales so that they are alternately face-to-face and back-to-back. When the stack of panels, so assembled, reaches a predetermined height, a caul board is placed on top and this unit is rolled into the hydraulic press.

I-beams are placed across this board at from 1 to 2 ft. intervals and the pressure applied. The I-beams on top are connected to the corresponding ones beneath the bottom caul board with retaining clamps to maintain this pressure after the bale has been removed from the press.

Low pressures are used for this assembly work since the ratio of frame to total surface area is small and since the decorative laminates when used are prone to accentuate any irregularities in the skins, the frame, and the honeycomb.

The specific pressures average approximately 25 p.s.i. on the entire surface of the panel. The specific pressures are first calculated on a basis of 50 p.s.i. on the frame and 10 p.s.i. on the honeycomb and are changed as the need becomes evident. The key to sufficient pressure is in the glue squeeze-out.

The adhesives used are either urea-formaldehyde resin or casein depending upon the gluing characteristics of the skins. Because of the low pressures used, there is a tendency for the glue lines to be thicker than normal in some areas.

While the casin glue has good gap-filling characteristics which maintain its strength in thick areas, this quality is given to the urea-formaldehyde resin by means of a craze-resisting additive.

After being held under pressure by the retaining clamps for a minimum of 8 hrs., the bales are taken down and the panels conditioned at least another day before being machined. Following the necessary trimming, shaping, boring, and sanding, the panels are inspected thoroughly. They receive another inspection after the finish has been applied.

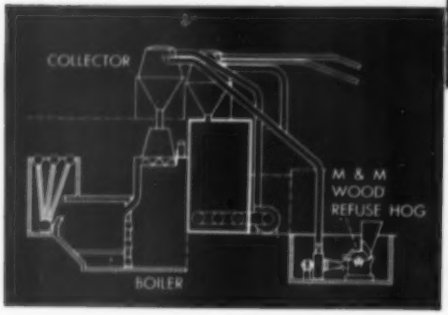
Considering the high strength-to-weight ratio and the possibilities of reduced costs, paper honeycomb has established itself as a practical core material. However, the use of paper honeycomb brings with it the need for very close tolerances of all materials making up each panel and also different methods of stock preparation.

M & M REFUSE HOG INSTALLATION

TURNS HAZARDOUS WASTE INTO VALUABLE FUEL SUPPLY

In addition to reducing fire hazards, the installation of the M & M refuse hog (shown at right) converts waste material into money-saving fuel which reduces coal bills, labor costs and creates savings in floor space.

When waste material is processed for fuel, board chips, as sawdust or wood flour, MITTS & MERRILL Hogs—which come in a large variety of sizes and models—produce a better quality, have an increased output and a more uniform product.



The diagrammatic drawing discloses the neatness and simplicity of a complete system, including storage bins and ducts, resulting in a sharp reduction in manual handling of scrap. Firms like the Ford Motor Company and Parke-Davis Company are two of the many who are using M & M refuse hogs in their plants.

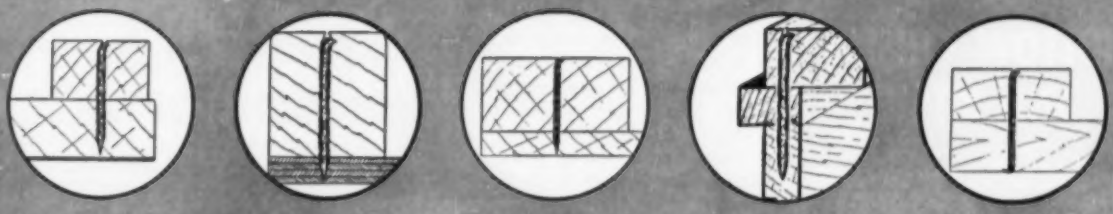
M & M Hogs require less labor, and if waste wood is processed for fuel, they will keep power and maintenance costs low. The complete line of M & M hogs is available with top or side intake and side or bottom discharge. Write for complete information.

M & M HOGS

MITTS & MERRILL, 1018 So. Water St., SAGINAW, MICHIGAN

97 *"Builders of work-saving, money-saving and material reclaiming machinery since 1854"*

WHATEVER DIMENSIONS YOU FASTEN . . .



UP TO 2¾" NAIL LENGTH . . .

AUTO-NAILERS

ARE THE GIANT STEP TOWARD AUTOMATION!

They speed production because they automatically drive as many as 3 nails a second, under full control of operator: brad, clinch, or plain — as desired. Versatile, they do 101 woodworking jobs, with practically no set-up time. They can be remote-controlled. Multiple installations can be singly or gang-controlled.

Hurricane Drive prevents splitting . . . no bent-nail correction delays. Controlled penetration; accurate automatic countersink.

The greenest operator cannot damage material; no half moons, no hammer bruises. No operator injuries, no flying nails. 8 AM accuracy at quitting time.

For the first time the auto industry's mass production methods can be applied to high quality woodworking.

If you want an impartial engineering survey of what Auto-Nailers can do for your production and profit, write for full information. No obligation.

IDEAL FOR GLUE-JOINTS

WORKING RANGE OF AUTO-NAILERS

MODEL	NAILS Length	NAILS Gage	WORK AREA Height	WORK AREA Depth
Crusader—2	¼ to 1"	18-19-20	9¾"	2¾"
Mercury—3	¼ to 1¼"	17-18-19	9¾"	2¾"
Spartan—4	¼ to 1½"	15-16-18	35"	12½"
Trojan—5	¼ to 1¾"	15-16-17	14½"	8½"
Hercules—9	½ to 2¾"	13-15	32½"	15½"

AUTO-NAILER

AUTO-NAILER CO., 269 Marietta St., N.W., Atlanta 13, Georgia

FOR ACTION MAIL THIS COUPON:

Auto-Nailer Company
267 Marietta St., N.W.
Atlanta 13, Georgia

Please send me free information about Auto-Nailers.

Firm Name_____

Firm Address_____

My Name_____ Title_____

"GET
Top Performance
FROM YOUR
HOLLOW CHISELS
AND BITS!"

GREENLEE

SEND FOR THIS NEW
GREENLEE BULLETIN
IT'S FREE!

Get a full return on your investment in hollow chisels and bits by keeping them in the best condition at all times. This new four-page bulletin gives detailed instructions for adjusting and sharpening . . . tells how to reduce breakage. We will be pleased to send you a copy.

GREENLEE
TOOL CO.
Division of Greenlee Bros. & Co.
2159 HERBERT AVE.
ROCKFORD, ILLINOIS

Finger Jointing
Continued from Page 21

40,000 to 45,000 bd. ft. per 8-hour shift is reduced to usable cut stock. A couple of years ago some 70 to 75% of the total raw material was finding its way into a finished product. Between 6 to 10% of this finished product was made up of unprofitable items of box cleats, etc., which actually had a selling price lower than the shop lumber from which it was cut.

These non-profit items were dispensed with by the installation of a finger jointing operation. By use of the finger jointing machines it is now possible to take all cuttings down to 6 in. in length and build them back into long items. This further increases the overall yield from the raw material, since certain items which formerly went into the waste conveyor and were burned are now appearing in high value stiles and similar products. The labor and handling involved in the finger jointing operation is no more, and in some cases is less, than the amount required to manufacture box cleats or even the cost of burning the scrap!

This finger jointing assembly line has been in operation at Cascade for some two years. The yield has shown that there is a sufficiently higher value from the finger-jointed material to return a profit over and above the cost of the finger jointing and additional handling.

The actual records at this plant show an 81% yield this year as compared with 75% last year, a result of finger jointing. Since the mill cuts on an average of some 40,000 to 45,000 bd. ft. of shop lumber each eight hours this 6% greater yield means an additional 2400 bd. ft. of raw material available each eight-hour shift. This amounts to *a carload of additional raw material every week.* Equipment is used to produce the difference, but again, remember, people figured it out and decided to do it.

Edge gluing is presently being contemplated and, of course ,the addition of this secondary step will make it possible to realize an even greater return on the finger jointing investment, since there are certain items which presently may not be finger-jointed profitably because of the narrowness of the piece developed. As soon as the widths can be built up, a good deal more of these waste pieces will find their way into profitable moulding items.

It is interesting to note that the addition of finger jointing has not in any way interfered with the normal flow of material through the plant. Items from the cutting department which are ready to be machined into finished parts of jambs and frames move directly from the cutting department to the moulding department.

The other items, which will be finger-jointed prior to machining, move directly from the cutting department to the finger jointing department and return to the moulding department in long lengths. All movement is done on pallets with fork lift trucks.

Every frame produced in this plant is made from a set of drawings. In some cases, the customer furnishes the design to meet a local preference and in other cases, Cascade Wood Products provides the design. A set of prints is prepared and at six different control points through the manufacturing operations, a supervisory employee is required to check dimensions and initial the order to indicate compliance.

As a final check, one frame or jamb set is taken at random from each car shipped and is personally assembled by the loading department foreman. Since this is taken at random, it can be assumed that this represents a cross section of the material in the car. The assembly passes the inspection of the loading department foreman, the car is released, and the assembled jamb or frame is placed on top of the shipment as evidence to the customer that the shipment has been checked out by actual assembly.

Because of the variety of sizes produced in a business of this type, it is difficult to accumulate cuttings profitably to take care of customers at all times within the required shipping date. Cascade Wood Products has overcome this problem with a very thorough scheduling system which has permitted them to say with pride that they can schedule four months in advance the specific week in which shipment will be made. They hold their heads high, too, when they say with pride that they have consistently maintained their shipping schedules.

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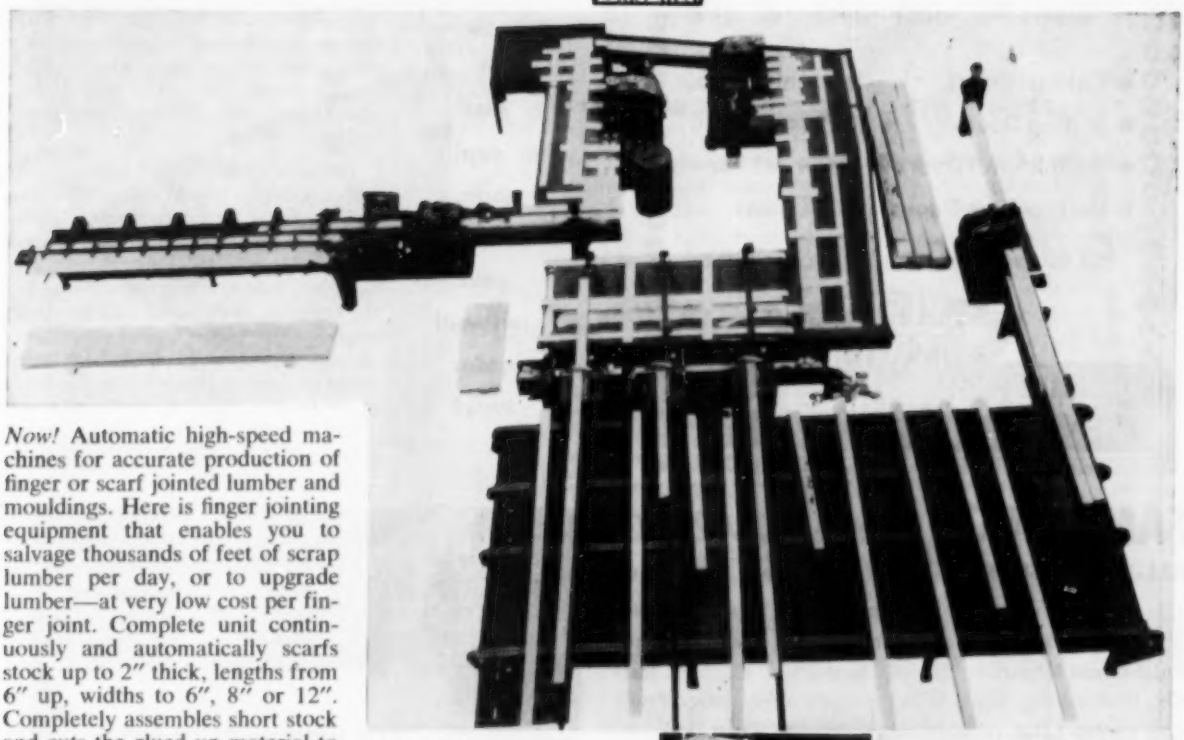

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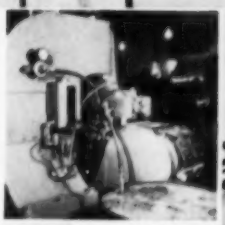
More than 50 conveyorized finger jointing plants like this are in production. (Photo of scale model)



Inset: Automatic glue applicator mounted on shaper.

Above: Model 86 (6″) assembly machine. Also available for 8″ and 12″.

Right: Basic finger joint shaper with extended bed for glue applicator.

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Particle Board Machining

Continued from Page 25

and then parallel to the grain.

With respect to edge chipping, the seven boards fell into two groups: The better group consisted of boards Nos. 3, 4, 6, and 7, which were about equal. Those in the second group, Nos. 1, 2, and 5, were also about equal but at a slightly lower level.

PLANING. Before applying veneer, particle boards are sometimes planed to the required thickness. Other things being equal, a smooth planed surface is preferable for veneer application. As in other machining operations, the results vary not only between different brands but with any given brand under different machining conditions.

Figure 4 shows the results obtained with a cabinet planer at 3,600 r.p.m. and a feed of 36 f.p.m. with a 1/16-in. cut. These were not necessarily the best machining conditions. The object, however, was to show differences in the behavior of different boards when treated alike under typical shop conditions. Direction of feed had little effect on quality of surface in the flat-press boards, Nos. 1, 2, 3, and 4. These four do, however, differ noticeably in the openness of the planed

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TWO-WAY AGITATION ▶

To the right is a partial view of a 60 gallon cold glue mixer arranged with a variable speed drive and water jacket. The covers have been removed showing accessibility for cleaning, and also the double agitator arrangement. Note the thick double walled tank permitting free circulation of water for cooling the glue batch.

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surface because of differences in manufacture, such as kind of wood, size of particles, and amount of compression used.

With the extruded boards, Nos. 5, 6, and 7, direction of feed was a significant factor. These three boards were fed both at right angles to the chip direction and parallel to it. As shown in figure 4, the results were consistently better in boards fed parallel to the chip direction. Fortunately, the machine operator usually has an option as to the direction of feed. Cuts were made at 1/32, 2/32, and 3/32 in., but cut depth appeared less important than it is with lumber, although the shallower cuts gave somewhat better results. Roughening of the surface in planing results in part from the voids that are found to some extent in all particle boards, and in part from chip tearouts. In general, chip tearout can be reduced by adjusting the feed and speed rates to increase the number of knife cuts per inch.

SANDING. A sheet of particle board as it comes from the press often varies in thickness at different points by as much as 1/16 in. or more. This variation is too great for core stock, and sanding is commonly done to size all sheets to a uniform thickness. Six- and eight-drum sanders are generally used for this job. A thickness tolerance of ± .005 in. is common commercial practice, and this can sometimes be bettered under favorable conditions. In addition to sizing sanding removes any surface glaze that may be present in extruded boards.

Sanding creates a smoother surface than planing, mainly because it does not produce the chip tearout that may result from planing, as well as eliminating minor surface irregularities. Once boards are sanded differences in their surface smoothness depend chiefly on the size and number of the voids. Significant differences in this respect can be detected by careful visual examination and comparison. Since the voids are distributed throughout the thickness of the board, sanding beyond a certain point does not improve the results.

TENONING. Particle board cores are typically edge banded with narrow hardwood strips to which they are joined with a tongue and groove. The groove is cut on the strips, and the tongue is cut on the particle board. Frequently the tongue is cut on a double-end tenoner, and the process is referred to as tenoning. In this test the tongue was cut on a spindle shaper at 5,400 r.p.m.

The results differed quite noticeably in different boards. Board No. 4 produced the smoothest cut, Nos. 1 and 5 the roughest, and the remaining four boards produced intermediate cuts. With the four flat-press boards, Nos. 1 to 4, there was no noticeable difference in the tenoning of adjacent edges. With the three extruded boards, however, cutting parallel to the grain gave noticeably smoother work then cutting across it.

Banding extruded boards for core stock is an operation that is necessarily performed on all four edges, including the two that are more difficult to machine.

SHAPING. Although corners and edges of particle board are not customarily exposed in use, they are sometimes shaped to receive metal fittings or for other reasons.

Figure 5 shows the results obtained when a cove was cut on one corner of the boards with a spindle shaper at 5,400 r.p.m. Board No. 4 gave the smoothest cut. Boards Nos. 2, 5, and 7 were about equal, but not quite so good. Boards Nos. 1, 3, and 6 were also about equal but again at a slightly lower level. In the extruded boards, the cuts parallel to the grain were smoother than cuts made at right angles.

ROUTING. Particle board panels must sometimes be grooved for insertion of shelves and dividers. In this test, grooves 3/8 in. wide by 3/8 in. deep were cut 1/4 in. from the edge to show more plainly any tendencies for chips or particles to break out that might be present in some boards. Cuts varied in smoothness (figure 6), as in preceding tests, and in general the order of quality remained about

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the same among the different boards.

The extruded boards all exhibited pronounced break-out tendencies when machined across the grain. The cuts shown in figure 6 were made with a high-speed router at 18,000 r.p.m. A second series of grooves, cut with a dado head, gave much better results—too good, in fact to show any significant differences in break-outs.

DRILLING. Where particle board is doweled, drilling quality will be important. Two factors are to be considered: smoothness of cut and trueness of hole size. A serious deficiency in either will reduce the strength of the doweled joint. A series of holes 1 in. deep were drilled with a 3/8-in. wood bit in adjacent edges of samples of the seven boards tested.

Materials Handling

Continued from Page 27

fective tool often used. Sessions must be held where criticism is discouraged and constructive ideas and even, "wild ideas" are encouraged. The "we" attitude must be fostered and the feeling of accomplishment cannot be assumed by any one individual. Each member helps create the project and assists in seeing it to a successful conclusion.

The general approach to a problem whether handled by an individual or a sub-committee is:

(1) Define the problem.
(2) Determine alternate solutions.
(3) Establish a means of measuring present and future costs if the information is not available.
(4) Evaluate alternate solutions in terms of probable cost savings and other considerations.
(5) Select the best solution and outline the program.
(6) Pursue the program and determine the savings.
(7) Report progress periodically.
(8) Make final recommendation.
(9) After installation, make final report.

Savings are presented on a strictly out-of-pocket basis. They must be realistic figures and not exaggerated. We follow the following general rule:

Out-of-pocket or actual savings is the amount of money that it is reasonable to expect Norton Company will actually stop spending as a result of the change. This should exclude any items of cost which will continue unchanged whether or not the new plan is put into effect. It should include actual labor savings, material savings, probable changes in tool costs, maintenance, etc. Fringe benefits on labor may be included, since costs such as vacation pay, insurance contributions, etc., vary directly with labor.

Reports are first made to the manager's committee. If the problem is assigned to an individual, he makes the report. If it is delegated to a committee, the report will be made by one or more representatives of the committee. In other words, an industrial engineer may present a statement of the problem, the approach and the statement of cost, and the foreman the solution and the results.

The use of visual aids assists in taking the pressure off the speaker. These aids also make it easier for those listening to follow the discussion in a logical manner. Typical aids are charts showing: (1) Statement of problem, (2) Tabulation of costs at outset, (3) Outline of program, (4) Tabulation of costs at conclusion, and (5) Summary of savings.

The speaker uses the charts as notes and in most cases makes his presentation without other references. The meeting is as informal as possible, yet with decorum. The speaker must be put completely at ease. Illustrative production items, samples of materials, items of equipment, etc., that can be readily transported to the meeting serve to make the presentation more interesting.

Helpful suggestions are made by the committee in regard to presentation and improvement of visual aids. General discussion sometimes opens up

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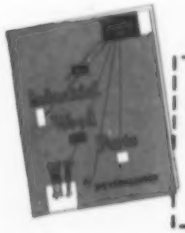

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new avenues of approach to cost reduction which are referred back to the individual or committee for further study. If the report is satisfactory, it is then referred to the cost reduction committee for review.

Although no written reports are submitted, it is the responsiblity of the secretary of the manager's committee to keep detailed minutes of all meetings. This actually results in a written record of all reports and also keeps all cost reduction records in one file.

The "finished" report is then presented to the cost reduction committee. The meeting is held in the director's room with everyone seated around a big oval table.

Again every effort is made to put the speaker at ease. If he is an "old-timer" subjects of mutual interest are discussed during the period when the group is gathering. If he is not acquainted with everyone, introductions are made with someone taking the new comer "in hand." While the report is being given, interruptions are usually held to a minimum. Considerable discussion takes place after the report is completed. Reports which reach this stage are usually well presented and the speaker receives the individual compliments of those assembled.

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Materials Handling and Packaging Engineer, Talon, Inc. Meadville, Penna.

MATERIALS HANDLING accounts for as high as 50% of your manufacturing costs to produce a product. The national average for handling costs is approximately 30% of your manufacturing cost of a product.

Yet, today, we find companies buying equipment not really knowing what savings it will affect, whether it is the right size and capacity, or having no real basis for installing it. Many times equipment is purchased through seeing an installation at a plant you may have visited. Without a thorough investigation, equipment is purchased and installed only to find out at a later date it is not appropriate for the job.

A large percentage of the materials handling systems installed today have been pieced together and were primarily started with the purchase of equipment. The major portion of materials handling systems were installed without evaluation and the equipment was purchased without regard to size of loads, frequency of movement, building facilities, floor loads, and many other factors which enter a problem and prevents a system from operating at optimum capacity, lower human effort and operating cost. We all know of many installations of this type in the past and even at the present time, and we hope they do not continue.

Who is responsible for conditions like this? Is it management? The equipment salesman? Or is it just a lack of knowledge about materials handling and failure to make a complete analysis of your system?

Why alibi or try to resolve why some things were done or handled as they were. This issue today is whether these decisions will be made by a man designated to concentrate on materials handling who is qualified for this job or whether they will be made haphazardly by change, by habit, by "guess or by gosh" or by dozens of men in one company with various degrees of knowledge and authority and with competence and standardization left to luck.

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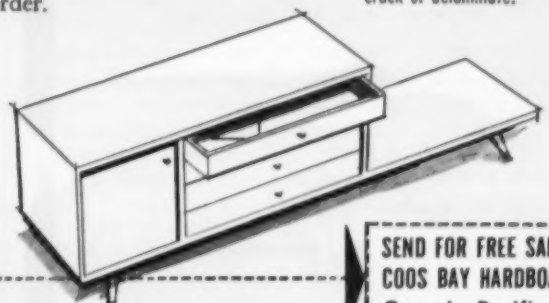

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Materials handling progress is directly related to the adoption of the latest and best methods in any modernization program. Excellent records of materials handling economies have been made by revamping the older buildings available and by the installation of improved methods and the latest types of materials handling equipment.

Studies of materials handling methods, packaging designs, layouts, movement of materials and the handling equipment should be the responsibility of the materials handling engineer working with the plant staff personnel to co-ordinate all of the various ideas of each individual into an efficient system.

The modernization of materials handling operations is one of the most important in the list of basic handling factors and could mean the success or failure of any system if not properly emphasized.

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At Talon, Inc. the materials handling function reports to the manager of industrial engineering, who in turn reports to the production manager. A survey of many plants reveals the materials handling function is part of the industrial engineering department.

What are the qualifications of the materials handling engineer? The materials handling engineer should have an industrial engineering background, with practical experience in methods work. Materials handling is methods improvement and the equipment is a minor part of the system.

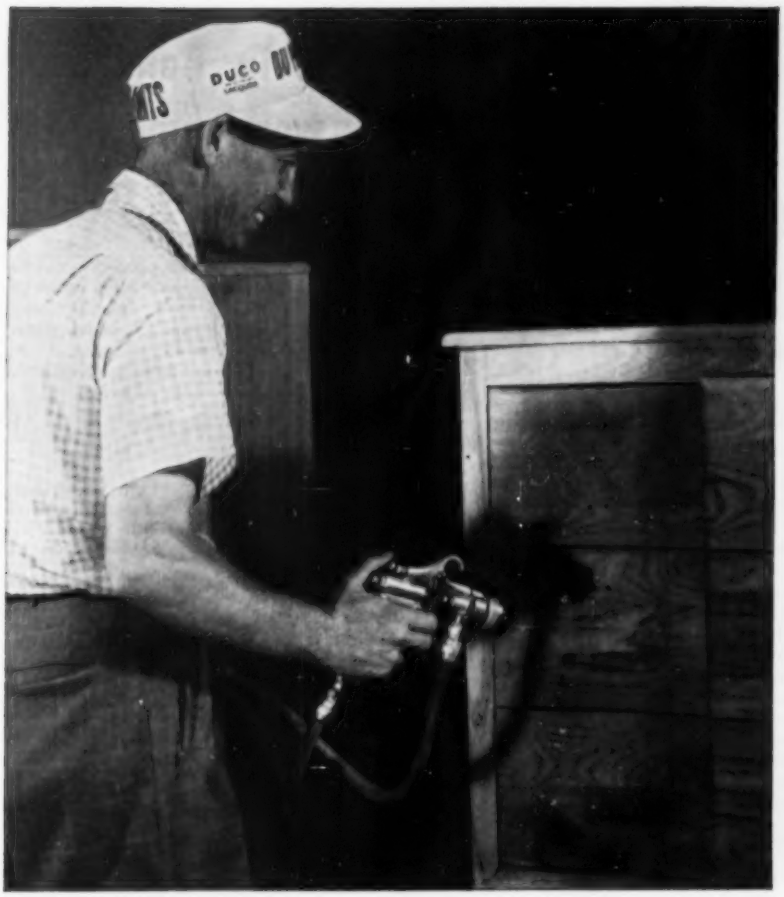
The materials handling engineer should have a general knowledge of shipping and receiving, package engineering, layout, manufacturing processes, costs, and a general knowledge of the various types of devices used in materials handling. With this knowledge the materials handling engineer can co-ordinate all phases of the system for a complete analysis of the proposed system. This will eliminate purchasing equipment that will not do the job, or installations of systems that are not practical for the operation.

In a large number of manufacturing plants today, you will find the packaging function is a responsibility of the materials handling engineer. Industry is also realizing that plant layout ties directly in with the materials handling engineering function.

Materials handling, packaging and layout are tied closely together into one unit. The type of materials handling system and the equipment required is determined by the package your materials or components are received in, the method in which you package and ship your end products and the layout of your plant and production equipment. Great savings have been realized by tieing these three functions together resulting in a very efficient materials handling system.

A materials handling system requires a lot of original thinking. Impress upon your department heads, foremen and supervisors to be material handling conscious and have them present their ideas to you. Consult your production, planning and methods departments for their ideas. Through correlation of the thoughts of all concerned you will come up with a very efficient system. Present your system to the industrial engineering department for an analysis to determine the savings involved. With this approach there is less tendency for failure of a system.

Editors' Note—*Information in the accompanying articles was taken from recent 7th National Materials Handling Exposition & Conference, Philadelphia.*



▲ Dresser with topcoat of Clear "Dulux" not only looks distinctive in the showroom, but keeps its beauty in the home. Gerry Pinkus, Sales Manager, reports that the Du Pont Furniture Tag gives an extra sales advantage.

◀ At L. A. Period Furniture Mfg. Company, the fast-drying Clear "Dulux" is applied with standard spray methods. According to Carl Gaddy, Finishing Supt., "Dulux" gives a dry film that polishes to a clear, bright gloss with a minimum of effort.

Du Pont DULUX® doubles drying-room production,

cuts topcoating costs one-third . . . looks and lasts like finest lacquers

With finishing costs representing such a large portion of the cost of furniture today, Du Pont "Dulux" brings welcome economy to manufacturers.

"Dulux" Furniture Finish dries fast in a force-drying system, either with a modern conveyor-type oven, or overnight, in ordinary box-type drying rooms equipped with inexpensive unit heaters. Manufacturers have found that they can easily double existing drying capacity with "Dulux."

And "Dulux" cuts finish-coat costs. *One* gallon of "Dulux" will topcoat the same area as nearly *two* gallons of lacquer. This alone gives a net saving of almost one-third on every topcoat job.

In addition, application costs are lower with "Dulux," because it produces such a high build (1.5 mils) with one single coat, thus reducing both labor costs and finishing time.

Learn how you can get all these important "Dulux" savings for your own operation—and get the famous Du Pont Furniture Tag, too. For details write: E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Del.

Mr. Nathan Gill, Factory Supt. of L. A. Period Furniture Mfg. Company finds that "Dulux's" quicker drying means greater production from his drying rooms. And he reports that it reduces both labor costs and finishing time.

The best-dressed furniture wears a Du Pont tag . . .

DU PONT
REG. U. S. PAT. OFF.

DUCO and DULUX
Furniture Finishes

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

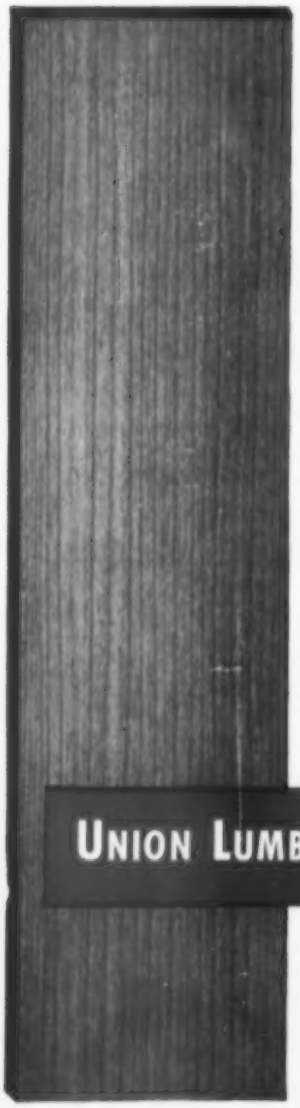
Symbols of the finest

In securities it's...

BLUE CHIP

In REDWOOD it's...

NOYO — UNION LUMBER COMPANY



When your customers ask for Redwood it's because they want Redwood's distinctive qualities. When you sell them NOYO brand they get Redwood at its best. For Union Lumber Company has unmatched modernized milling facilities and perpetual timber supply, backed by nearly three-quarters of a century's "know how."
When you order—

- **Certified Dry**
- **VG & FG Stock**
- **All Patterns**
- **Mouldings**

Redwood's most desirable qualities fulfill your expectations.

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Carefully assembled cars mean economical and damage-free unloading—keep true "once a Noyo Dealer—always."

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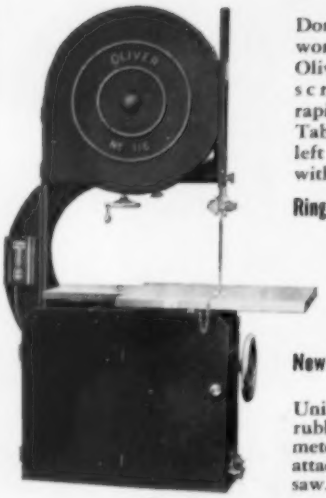
Member California Redwood Association

OLIVER 36-in. Band Saw speeds work through the machine room



Don't let size and variety of work hold up production! The Oliver handles a wide range of scroll work smoothly and rapidly. Takes 22" under guide. Table tilts 45° to right, 5° to left — self-locking. Available with any type of drive.

Ring-Disk Wheels --finest made

Strong, light, rigid, balanced wheels run true and smooth without vibration at all speeds.

New Power-Feed Unit --Feeds 80' a minute

Unit has micrometer fence and rubber feed-wheel with micrometer adjustment. Unit can be attached to your present band saw. Write for Bulletin 116D.

Oliver also makes 18", 30" and 38" Band Saws. Write for Bulletins.

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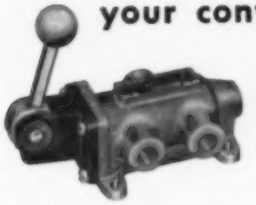
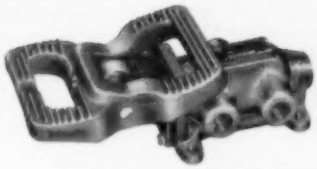
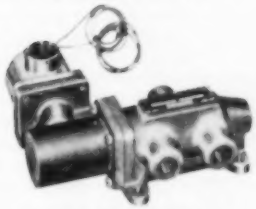


Hand-Operated Four-Way Valve



Foot-Operated Four-Way Valve

Pilot-Operated Valve



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QUALITY AIR CONTROL PRODUCTS

WHAT'S NEW

in Wood and Allied Products

This new department presents to our readers new finished wood products which may indicate trends of importance in marketing operations. Be sure to keep us informed of any outstanding products you plan to introduce to the trade!—The Editors.

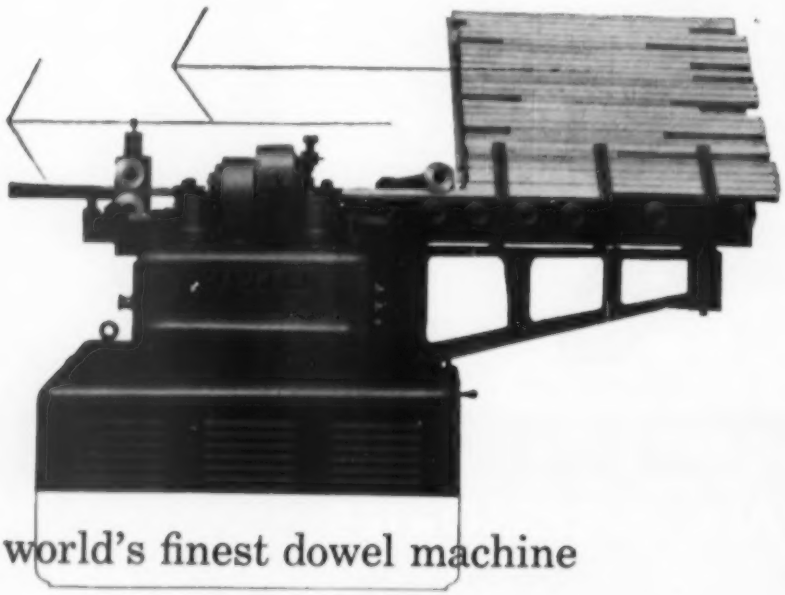
Typewriter Desk

A modern walnut typewriter desk has been introduced by Sligh-Lowry Furniture Co., Holland, Mich. Desk is available either as an open kneehole model, or with walnut framed natural cane modesty panel. Left pedestal opens to accommodate full-sized standard typewriter. Overall size is 30 x 10 x 54 in. Trim is brushed brass. Also available with drawers in left pedestal replacing typewriter space.

Occasional Chairs

"Musical Chairs" can be played in comfort and style with a new collection of upholstered chairs called the "Young America Group, 1958" offered by J. L. Chase Co., Chicago, Ill. Designed by Henry P. Glass Associates, the chairs come in three styles—a high-back and two low-back models—all with sculptured, walnut-finished legs. Removable, walnut-grain, rectangular table top attachments can be slipped in place over brass caps between a pair of chairs to double as lamp or snack tables. Linked-together chairs can create straight, circular or serpentine arrangements of any number of chairs or can be used as "tete-a-tete" love seats.

Study Millwork by Mail. Northern Sash & Door Jobbers Assn., Chicago, has granted $5,500 to Michigan State University for the development of a millwork correspondence course for industry personnel. The 20-week course, written by William B. Lloyd, professor of forest products at the university, in cooperation with the association, will include basic house construction concepts, blueprint reading, millwork product detailing and application, and sales techniques, all geared not only to train new personnel but to keep experienced salesmen up-to-date on ideas, products and trends.



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new ruggedness, economy!

One man can keep the Hawker rod and dowel machine running at capacity all day long, with random length and out of square stock . . . at higher feed speeds! It's ruggedly constructed to modern precision machine tool standards; Timken tapered roller bearings throughout . . . solid steel cutter head.

Look at these outstanding features: minimum of vibration and chatter, no splintering—self-centering guide holds stock to within ½" of cutters. No twisting or spinning of dowel—vertically mounted outfeed rollers prevent it. Higher cutting speeds, better surface finish —variable stock feed drive.

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"I know how hard you try to come up with new plywood markets, Harper, but AFTER ALL—plywood slingshots, plywood clothespins, and plywood . . ."

Hollow Cores

Continued from Page 23

(7) Light in weight – excessive floor weights, shipping and handling costs are to be avoided.

(8) Gluable. Gluing properties, particularly with respect to absorbency should come close to matching wood.

(9) Stable – dimensional stability should fairly well match the wood frame. Marked change with moisture variation or distortion on aging can ruin the finished appearance of the door.

(10) Adequately strong – strength requirements for hollow-core materials are not particularly severe if wide sections are used, but it must be remembered that the core area is only a fraction of the panel area.

(11) Compressible–ability to yield somewhat under gluing pressure is a marked advantage since dimension tolerances are then greater.

(12) Adequate in gluing area–gluing becomes more difficult when thin edges are to be glued to a face, especially when the core is moved with respect to the face during assembly. The glue will then not be at the joint where it is needed.

(13) Temperature resistant–maintenance of strength at elevated temperatures is necessary with hot-pressing. The core material should not weaken or deform at temperatures of 160-180° F. such as may obtain on dark surfaces in direct sunlight.

None of the present core materials is perfect in all respects. Those in successful use are the survivors of dozens abandoned after more or less extensive trial. Others are constantly under development and further improvement is to be expected each year.

Any new proposed replacements or substitutes for the present hollow core should be evaluated feature by feature and a realistic comparison made.

"Charlie's getting ready to produce his masterpiece."

WOOD PUZZLERS

This department is designed to help find answers to your production and sales problems. Let us know what information you need. Other readers may be able to help you.—*The Editors.*

230—Seeks Birch Dimension

Will you please furnish us with firms that would be able to supply us with clear white birch or white maple cut-to-size stock. In the near future we expect to be in need of small and large quantities of this wood. Any assistance will be greatly appreciated. *(Ga.)*

231—Basswood Core Stock

We are interested in finding users of basswood core stock and basswood ladder constructed core stock made up to their specification. We also make basswood dimension stock and seek inquiries. *(Wis.)*

Alger-Sullivan Lumber Co., Century Fla., has recently been acquired by a new corporation headed by Leon S. Clancy, president, Southern Pine Assn. and Clancy Lumber Co., Inc., Grayson, Ala., and Hobart Manley, president, Reynolds & Manley Lumber Co., Savannah, Ga. The new corporate name will be Alger-Sullivan Sawmill Co.

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Speed up production – lower manufacturing costs by using Pamudo's Specialized Service for Industrial Users. Fir plywood and West Coast lumber items for furniture, containers, luggage or even surveyors' stakes. In standard sizes or machined to your specifications.
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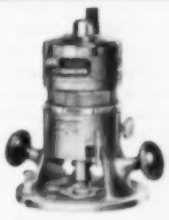
If you use woodworking tools . . . you always SAVE with SKIL portable tools.

Harold Foster, owner of Foster Cabinet Shop, Moline, Illinois, selects the SKIL Model 299 Router as the biggest money saver in his shop.

The versatility of the router allows him to do more kinds of work. "And," says Mr. Foster, "it is a lot faster than any table saw operation. It is more accurate – gives a real professional job. I can do cleaner work without tearing the wood. It has meant 75% dollar savings in my shop."

This experience means great savings to the company – savings in money, time and material. You, too, can SAVE with SKIL tools. Ask a SKIL distributor to show you the features on woodworking tools that mean savings. Or simply write SKIL direct for a free industrial power tool catalog: SKIL Corporation, Dept. WDT-97, 5033 Elston Avenue, Chicago 30, Illinois.



SAVE WITH 1¼ H.P. ROUTER

Model 299 Router shown in use above features powerful 1¼ h.p. motor. High bit speed means smoothest possible cuts on any routing job. Simple adjusting ring holds accurate depth. Lightweight. Easy-to-handle.

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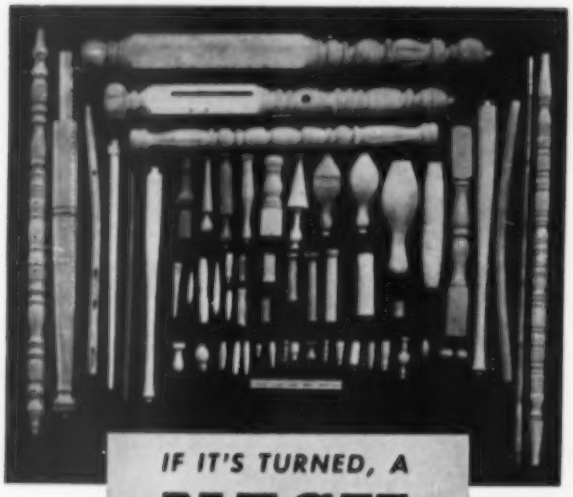
NAMES and EVENTS

Industry Groups • Suppliers • Personnel

INDUSTRY NEWS

American Forestry Convention. "Wood Utilization, From Stump to Finished Product" will be the theme of the American Forestry Assn.'s annual convention, September 30-October 2, at the Loraine Hotel, Madison, Wis. The first day will be devoted to talks by DeWitt Nelson, director, California Department of Natural Resources; Frank H. Kaufert, director, School of Forestry, University of Minnesota; C. D. Dosker, president, Gamble Bros., Inc., Louisville, Ky.; and Dr. George A. Garratt, dean, School of Forestry, Yale University. Panel discussions entitled "Current Examples of Progress in Improving Utilization and Management" and "Improving Utilization Through Research and Education" will be held the second day. Highlight of the meeting will be an address by the Honorable Fred A. Seaton, Secretary of the Interior. Members also will have the opportunity to visit the Forest Products Laboratory in Madison. A display of wood and paper products will be held in conjunction with the meeting.



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CAN SAND IT!

No. 50 Automatic Turning Sander

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No. 53, 30-Degree Round Stock Sander

For over 60 years, NASH Sanders have been the leaders for sturdy dependability and cost cutting efficiency. That's because each machine is designed to do the job right —on any type of turning or wood. Whether for standard application or something entirely new, there's a NASH for the job.

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SPECIAL FINISHING MACHINES SINCE 1890 NASH

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Addresses Seasoning Group. T. P. McLaughlin, sales engineer, Moore Dry Kiln Co., Jacksonville, Fla., was the main speaker at the recent summer meeting of the Wisconsin-Michigan Wood Seasoning Assn. in Shawano, Wis. He spoke on materials handling as it pertains to the lumber industry. Other activities of the meeting were an inspection tour of the Menominee Indian Mills, Neopit, Wis., and group discussions on individual drying problems.

Furniture Company Formed. A new upholstered furniture manufacturing company, Clark Chairs, Inc., has been formed in Chenoa, Ill. The factory contains 12,000 sq. ft. of manufacturing space, and is being set up for straight-line production. Deliveries on an initial line of swivel rockers is scheduled to start about October 1, according to Robert R. Clark, president. Other officers are John J. Rowell, vice-president, and Harold M. Hansen, secretary-treasurer.

Prefab Seminar. The Chicago premiere of a 13-minute color movie entitled "Those Fabulous Prefabs" was the finale of a recent seminar on prefabricated houses sponsored by the Prefabricated Home Manufacturers' Institute. The movie spotlighted the best in prefab designs and carried the manufacturing process from raw material through factory assembly line to building site.

The seminar, attended by builders and mortgage lenders, launched an aggressive selling campaign to home builders in the Chicago area. The advantages of prefab manufacturers assuming design and engineering responsibilities, land and financing functions, purchasing of all materials, and erection assistance was played up by most speakers.

Toco College Outline. A college outline in timber design and construction has been prepared by Timber Engineering Co., Washington, D. C., research affiliate of the National Lumber Manufacturers Assn. The outline, mailed recently to engineering and architectural colleges and universities, is designed to serve as a guide for a separate course, or as a supplement for other cources in timber design. It follows closely the "Timber Design and Construction Handbook" (see April 1957 WOOD & WOOD PRODUCTS, page 97) prepared by the company and published by F. W. Dodge Corp., N. Y. Subjects covered in the outline include: physical, chemical and structural properties of wood; design considerations; post and beam construction; types of roof trusses and fastening devices; exterior

N.A.F.M. CONVENTION

A complete report of the 29th annual convention and concurrent Supply, Equipment & Fabric Fair of the National Association of Furniture Manufacturers held August 25-28 at the Conrad Hilton Hotel in Chicago will be published in the October issue of WOOD & WOOD PRODUCTS.

—THE EDITORS

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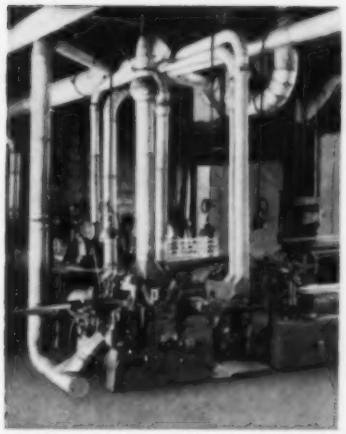
Bring your Dust & Waste handling up to date with a Modern OBP System



OBP dust and chip collection from high speed moulder incorporates ball joints for quick, easy access to machine for set-up and maintenance. Proper engineering of system eliminates any possibility of chip fall back onto work, and guarantees years of trouble-free operation.

For a surprisingly low cost, Ohio Blow Pipe can revise your present system to current requirements or anticipated capacity. At the same time, the newest and most efficient engineering advances can be incorporated. And OBP can revise your system without necessitating a shutdown of your plant.

A modernized OBP system can greatly increase per man hour production, reduce fire hazards and handling costs, increase machine life, up-grade work quality and result in better working conditions and relations within your own plant as well as in the surrounding community.

Call today for an OBP engineer to make a requirements survey of your plant and give you a cost estimate.

We do the complete job.

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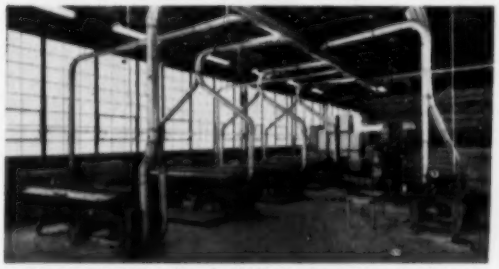

OBP system installed on line of multiple saws keeps area neat and clean — promotes much better working relations, and actually is responsible for increased production.

Photo shows OBP collector located on storage silo. This is part of an extensive system which automatically conveys all dust, wood flour and chip waste to furnace for use as free fuel.

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BOSTITCH H2B STAPLING HAMMER speeds light nailing jobs by two to four times compared to conventional hammers and nails. Cuts costs as much.

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Automatically fires hogged wood waste.

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vital to Wabash wood particle board

National Casein's urea resin and casein glues play a dual role in the utilization of wood residue to meet the Nation's expanding wood product needs.

First: National Casein's #750 urea resin is a preferred adhesive for bonding the wood particles into strong, durable core stock. It is water, work and wear resistant.

Second: National Casein's Glues are preferred adhesives for laminating veneers, or other materials used in the finished product to particle board.

Your NC Glue Man

National Casein's #750 Urea Resin contributes strength and longevity to a preferred core stock for table and counter tops, desks, cabinets, cupboard doors, veneering and plastic laminating.

Wabash Wood Particle Board is made of dry, clean and uniform particles of light colored soft woods . . . coated with a blend of National Casein's water-resistant synthetic resins and bonded under controlled heat and pressure . . . then conditioned to moisture content requirements.

Result is an economical, water-resistant, dimensionally stable, density uniform, and highly workable wood product.

The National Casein Glue Man who calls on you has interesting and helpful information and data on the subject of particle board manufacture and on its subsequent processing for consumer use.

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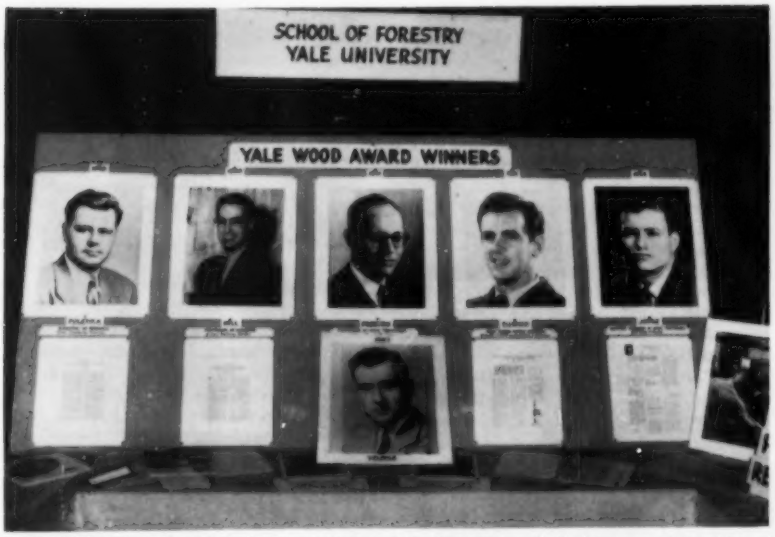

YALE UNIVERSITY EXHIBIT held at recent Forest Products Research Society annual meeting at Buffalo, N. Y., featured photographs of Yale School of Forestry graduate students who have won WOOD Awards for outstanding student research. Competition, established in 1948, is sponsored by WOOD & WOOD PRODUCTS in conjunction with F.P.R.S.

structural design and construction methods; and other pertinent data. Copies are available from the company at 1319 Eighteenth St., N. W., Washington 6, D. C.

Heads Hardwood Group. Hamilton von Breton, Tropical & Western Lumber Co., Los Angeles, was elected president of the Pacific Coast Wholesale Hardwood Distributors Assn. at the recent 37th annual meeting in Ojai Valley, Calif. Other officers elected were: Gordon Frost, Frost Hardwood Co., San Diego, first vice-president; Milton Taenzer, American Hardwood Co., Los Angeles, second vice-president; and James Cooper, W. E. Cooper Wholesale Lumber Co., Los Angeles, secretary-treasurer.

Furniture Club Grant. State University College of Forestry at Syracuse University has received a scholarship grant of $400 from the Furniture Club of America, Chicago, to be awarded to a student specializing in wood technology or similar studies related to the manufacture of furniture.

Wood Kitchen Handbook. A 32-page "Wood Kitchen Handbook" subtitled, "Wood–Leader in the Kitchen Revolution," has been published by the National Institute of Wood Kitchen Cabinets, Chicago. Among subjects covered are advantages of factory-made wood kitchens, what is available in wood cabinets, how to shop for wood kitchens, planning and styling, and installation and maintenance. Copies are available from the institute at 75 E. Wacker Dr., Chicago 1, Ill.

Office Planning Manual. A new illustrated office planning manual tying in with the current Better Offices in Wood promotion campaign has been published by the Wood Office Furniture Institute, Washington, D.C. Entitled "Office Planning and Layout," the manual offers practical, easy-to-follow guidance on such problems as space utilization, lighting, sound, color and furniture selection and arrangement.

Home Builders Show. Applications are being received for the 770 exhibit spaces available at the home builders exposition to be held in conjunction with the

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Designed
CONVEYOR SYSTEMS

Corley Engineers can help you solve that tough handling problem. Let our more than 50 years' experience put profit back in the picture for you.

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14th annual convention of the National Association of Home Builders, January 19-23, 1958, in Chicago. Spaces will be divided between the Conrad Hilton and Sherman hotels and the Coliseum. The association will begin processing registration and hotel reservations in October, giving special attention to N.A.H.B. and National House Builders Association of Canada members. Non-member applications will be processed in November.

Handling Automation Program. Some 300 leading lumber manufacturers, retailers and other distributors have launched a program to bring about greater automation in the handling of lumber from sawmill to retail level. Sponsoring the effort are the National Lumber Manufacturers Assn. and the National Retail Lumber Dealers Assn. According to Mortimer B. Doyle, executive vice-president of N.L.M.A., the program will seek to develop practical methods of packaging lumber at the sawmill so it can be loaded and unloaded from railroad freight cars by completely mechanical means, with a resultant cut in handling costs and reduction of damage.

The first test shipments of packaged or unitized lumber have been sent to retail dealers and distributors by sawmills cooperating in the program. Further shipments will be made during a eight-to-ten-month period, during which time any manufacturer or distributor interested may participate. Participants will keep records of loading and unloading procedures and condition of shipments upon arrival at destinations. Tests also are being made by Timber Engineering Co., research affiliate of N.L.M.A., to determine the most practical method of packaging mixed lumber items, such as boards, flooring, trim and dimension.

Lumber Dealers Show. With 91% of available exhibit space contracted for, the exposition committee of the 4th annual Building Products Exposition is considering the advisability of adding additional spaces. The show, sponsored by the National Retail Lumber Dealers Assn. and scheduled for November 4-7 in the Philadelphia Trade & Convention Center brings together dealers, manufacturers and wholesalers of building materials. Products and equipment to be featured in the exhibits will run the gamut of the building materials industry—from wire brads to heavy-duty straddle trucks. The 1957 show will require an estimated floor area of over 165,000 sq. ft., with an additional 31,000 sq. ft. of exterior space needed for materials handling demonstrations.

One man runs this Air Operated Wheland Carriage at Tilghman Lbr. Co., Sellers, S. C. Also shown: Wheland 6' Band Mill, Log Stop & Loader, Full Oscillating Nigger.

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MANUFACTURERS OF COMPLETE SAWMILLS AND AUXILIARY MACHINERY

NOTES ABOUT SUPPLIERS

Louis Gordon, Paterson, N. J., has entered the field of importing and distributing German woodworking machinery. A complete line of machines in all woodworking categories will be offered. Demonstrations of a number of machines will be held at the company's Paterson plant. A complete stock of spare parts and qualified service will be available.

Minnesota Mining & Mfg. Co., St. Paul, Minn., has opened new branch offices and warehouses at 4835 Para Dr., Cincinnati, Ohio, and 12200 Brookpark Rd., Cleveland, Ohio. The two-story building in Cincinnati has 47,000 sq. ft. of floor space. The Cleveland branch has 70,000 sq. ft. of floor space, double that of the company's previous facilities in that city.

Valvair Corp., Akron, Ohio, has completed a new products development and testing laboratory. The facilities are equipped with the latest testing and measuring devices for determining the dynamic characteristics of all types of valves and establishing engineering soundness of new designs.

Cardwell Machine Co., Richmond, Va., is co-sponsoring a research project at North Carolina State College's forestry research center for the purpose of finding new and improved methods of conveying wood particles pneumatically. Professor Sig Johnson is directing the project.

DeVilbiss Co., Toledo, Ohio, has purchased the Newcomb-Detroit Co., manufacturers of industrial finishing equipment. According to Howard P. DeVilbiss, president, the acquired company will be

WHAT'S NEW IN WOOD PRODUCTS?

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DEPARTMENT HF-97

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operated as a subsidiary. Through the transaction, DeVilbiss acquires additional manufacturing facilities in Detroit and Grand Rapids, Mich., important research facilities and specialized sales and engineering staffs which will be combined with those of the parent company. Products of Newcomb-Detroit — including waterwash spray booths, parts washers, dust collectors, continuous or intermittent conveying systems, flow coaters and replacement air systems—will supplement the DeVilbiss line of industrial spray-painting and finishing equipment, and will now be marketed through DeVilbiss international sales organization.

L. R. Wallace & Co., Pasadena, Calif., has moved to a new plant located at 172 N. Vernon Ave. in Pasadena.

Grant Pulley & Hardware Corp., Flushing, N. Y., has opened a new plant in West Nyack, N. Y., which now becomes manufacturing and sales headquarters in the East. The firm's West Coast office and plant will remain at its Los Angeles location. The new plant occupies eight acres of a 28 acre site.

PERSONNEL CHANGES

C. Russell Johnson, former executive vice-president, has been elected president, Union Lumber Co., San Francisco, Calif. He succeeds his father, the late **Otis R. Johnson.** He is the grandsom of **C. R. Johnson,** founder of the company. Also elected were **John H. Gray,** vice-president in charge of operations, and **H. Pierson Plummer,** member of board of directors.

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R. Redmayne

Robert G. Redmayne has joined the Cardwell Machine Co., Richmond, Va., according to **Eric M. Lipman,** vice-president. He will direct research, development and sales activities of woodworking machinery. He is the inventor of the Redmayne veneer tenderizer now in production at Cardwell. Before taking his present position, he was chief engineer of Southern Box & Lumber Co., Wilmington, N. C., where he developed mechanized methods of lumber core production.

John L. Aram has been elected a vice-president, Weyerhaeuser Timber Co. Tacoma, Wash., according to **F. K. Weyerhaeuser,** president. His duties include representing the company in its relations with lumber and plywood manufacturers' associations.

Robert R. Moyer has been promoted to assistant director of technical service, Plastics Div., Monsanto Chemical Co., Springfield, Mass.

R. Harrington

W. Bramlett

William T. Bramlett has been promoted from assistant sales manager to sales manager, G. M. Diehl Machine Works, Inc., Wabash, Ind. He previously held the positions of service manager, assembly department supervisor and field service engineer. Succeeding him is **Richard G. Harrington** who was promoted from the engineering department. Harrington was associated with Yates-American Machine Co., Beloit, Wis., in an engineering capacity before joining G. M. Diehl Machine Works.

Charles J. Short, manager of Evans Products Co.'s West Coast plants, has been elected a vice-president of the company, according to **E. S. Evans, Jr.,** president. He will continue to headquarter at Coos Bay, Ore. The company's main plant is located at Plymouth, Mich.

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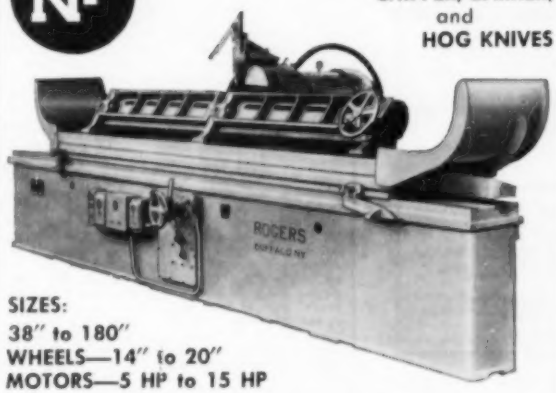

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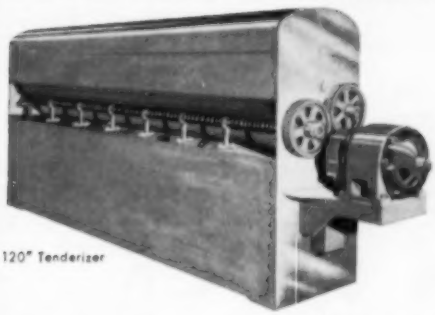

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ADVERTISERS' INDEX

Abrasive Products, Inc. 65
American Pulverizer Co. 52
Auto-Nailer Co. 57

Bauer Bros. Co. 48
Beverly Mfg. Co. 60
Black Bros. Co., Inc. 61
Black & Decker Mfg. Co. 41
Bostitch 77
Bradley Lumber Co. 74
Buss Machine Works 2

Carter Products Co., Inc. 74
Cardwell Machine Co. 83
Catalin Corp. 3
Coe Mfg. Co. 31
Commercial Factors Corp. 9
Corley Mfg. Co. 61, 79

DeWalt, Inc. 43
Douglas Fir Plywood Assn. 50, 51
Duo-Fast 16
DuPont de Nemours, E. I., & Co. 69

Ekstrom, Carlson & Co. 82

Fastener Corp. 16
Fay & Egan Co. 48
Filer & Stowell Co. 13
Finwood Industries, Inc. 42
Forest City Bit & Tool Co. 70

Georgia-Pacific Corp.,
Coos Bay Hardboard Div. 67
Greenlee Bros. & Co. 87
Greenlee Tool Co. 58

Hawker Mfg. Div.,
East Dayton Tool & Die Co. 72
Heil Co. 45
Henry County Plywood 47

Irvington Machine Works 74

Jamestown Veneer & Plywood Corp. 60
Jeffrey Mfg. Co. 29

Kason Hardware Corp. 42
Koch, George, Sons, Inc. 35

Lodge & Shipley Co. 33

Massey, Wood & West 77
Mattison Machine Works 49
Moreon-Johnson Machine Co. 37
Mitts & Merrill 56
Monsanto Chemical Co. 53
Moore Dry Kiln Co. 54

Nash, J. M., Co. 76
National Casein Co. 78
National Starch Products, Inc.,
Structural Products Div. 46
Newman Machine Co., Inc. 14
Norjac Trading Corp. 47
Northfield Foundry & Machine Co. 62

Oakley Co. 10
Ohio Blow Pipe Co. 77
Oliver Machinery Co. 70
Onsrud Machine Works, Inc. 4

Pacific Mutual Door Co. 73
Perkins Glue Co. 88
Pickering Lumber Corp. 12
Plywood Service, Inc. 26
Production Development Co., Inc. 13
Protection Products Mfg. Co. 5

Rogers, Samuel C., & Co., Inc. 83

Schrader's Son, A. 71
Simonds Saw & Steel Co. 63
Skil Corp. 75
Smith, H. B., Machine Co. 44
Smith, R. L., Lumber Co. 60
Standard Dry Kiln Co. 83
Stem, Chester B., Inc. 39
Supreme Woodworking Machinery Corp. 68

Tri-State Machinery Co. 59

Union Lumber Co. 70
Universal Door Carrier, Inc. 48

West Penn Power Co. 66
Weyerhaeuser Sales Co.,
Hardboard Dept. 81
Industrial Wood Parts Dept. 64
Particle Board Dept. 55
Wheland Co. 80
Whitney, Baxter D., & Son, Inc. 18
Williams-White & Co. 40
Woods, S. A., Machine Co. 17
Woodworkers' Tool Works 48
Woodworking Machinery Mfrs. Assn. 11

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For his contributions to the advancement of the wood industry . . .

Wood Salutes

DR. N. V. POLETIKA

PRACTICAL, LONG-RANGE RESEARCH for more complete wood utilization and short-range product development are close companions in the thinking of Dr. Nicholas V. Poletika, one of the younger leading men in the field of wood research.

As the first recipient of Yale University's Doctor of Forestry and Wood Technology degree, Nick, as he is popularly known, brought to the industry the latest skills and research tools to answer problems of wood manufacturers, suppliers and wood users.

In 1948 he became the winner of the first WOOD Award, given for outstanding student research, in competition sponsored by WOOD & WOOD PRODUCTS in conjunction with the Forest Products Research Society. His winning paper was entitled, "A New Method for Studying the Elastic Behavior of Wood."

During the past two years Dr. Poletika has served as director of research for Timber Engineering Co., Washington, D. C., research affiliate of the National Lumber Mfrs. Assn. As this "salute" was being prepared, however, WOOD & WOOD PRODUCTS learned that he had just resigned to accept a position as director of research and development for Union Lumber Co., at Fort Bragg, Calif. (Congratulations and best wishes for success, Nick!—*Ed.*)

His abilities are not limited to laboratory research alone, but embrace the practical day-to-day insight needed to make research pay off.

In a recent article, he wrote, "The most important principle in industrial research is getting the most out of every dollar spent . . . close adherence to the objective of each program is essential."

After receiving his B.S. degree in forestry at the University of Connecticut, he was employed by Curtiss-Wright Corp. in charge of adhesives, plywood and other materials.

In 1945 he resigned his Curtiss-Wright position, selecting Yale University for his graduate work. He received his M.F. degree in June, 1946, writing his thesis on design and fabrication with sandwich materials. During this period he acted as assistant laboratory instructor in adhesives, plywood and laminated products.

He received his doctorate in 1948. His dissertation, "Lamination of Connecticut Red Oak," was based on extensive research.

After completing his graduate work, he joined the Timber Engineering Co. laboratory staff as a wood technologist. He held positions of laboratory manager and assistant director of research for the next seven years. He became director of research in 1955.

As director of Teco's vast experimental facilities, and especially its unique new particle board pilot plant, Dr. Poletika was able to spearhead particle board development, a pet project which he regards as the greatest boon the industry has had in opening new markets and utilizing waste.

Supplementing his interest in latest research discoveries and techniques, he is a member of the Forest Products Research Society, Society of Sigma Xi, American Society of Testing Materials and American Railway Engineering Assn. He is active in committee work of the National Security Industrial Assn. and American Standards Assn.

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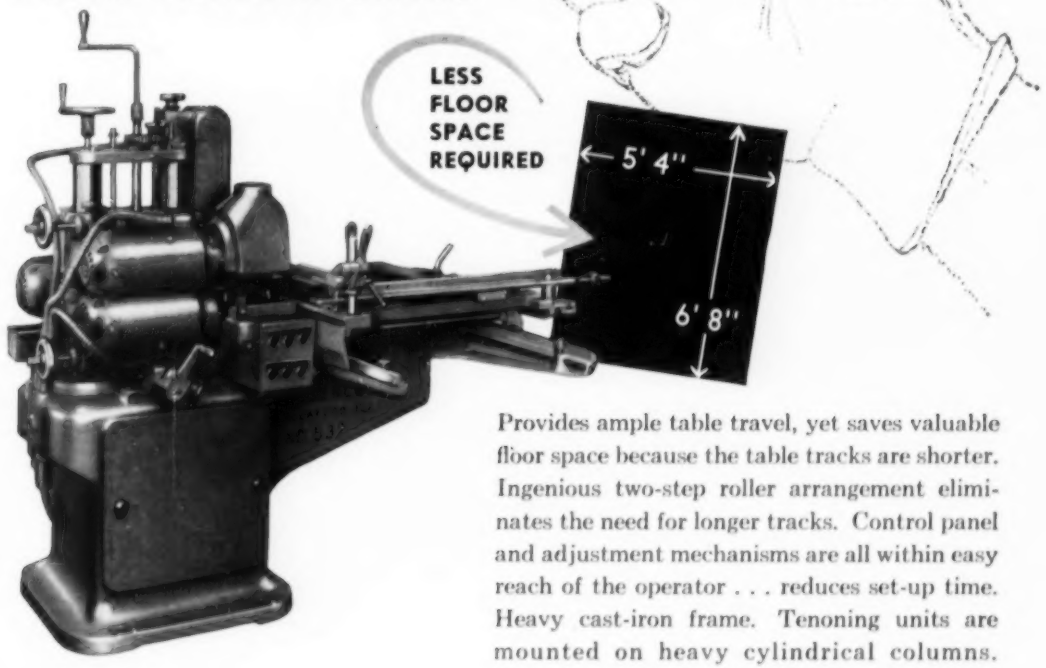

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